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CORCORAN, REICHL, AND MacAVOY NOMINATIONS

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

NINETY-NINTH CONGRESS

FIRST SESSION

ON THE

NOMINATIONS OF

THOMAS CORCORAN, ERIC REICHL, AND PAUL WEBSTER MacAVOY TO BE MEMBERS OF THE BOARD OF DIRECTORS, UNITED STATES SYNTHETIC FUELS CORPORATION

MAY 3, 1985

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CORCORAN, REICHL, AND MacAVOY NOMINATIONS

FRIDAY, MAY 3, 1985

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 9:30 a.m., in room SD-366, Dirksen Office Building, Hon. James A. McClure, chairman, presiding.

Present: Senators McClure, Wallop, Warner, Murkowski, Nickles, Hecht, Evans, Johnston, Ford, and Rockefeller.

Also present: Richard D. Grundy, senior professional staff member; and D. Michael Harvey, chief counsel for the minority.

The CHAIRMAN. The meeting will come to order.

OPENING STATEMENT OF HON. JAMES A McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. Today the committee will receive testimony on three nominations for the positions on the Board of Directors for the United States Synthetic Fuels Corporation. The nominees were recess appointed by the President on November 28, 1984, and their nomination was transmitted to the Senate as of January 3, 1985. The nominees are:

Mr. Thomas Corcoran, of Illinois, for the remainder of the term expiring on August 16, 1990;

Mr. Eric Reichl, of Connecticut, for the remainder of the term expiring September 14, 1986; and

Mr. Paul Webster MacAvoy, of New York, for the remainder of the term expiring September 14, 1991.

Our first nominee is Tom Corcoran who, as a former Member of the House of Representatives, participated actively in the formulation of national energy policy. He served on the Energy and Commerce Committee, as well as the Subcommittee on Fossil and Synthetic Fuels. Currently employed as Vice Chairman of the Synthetic Fuels Corporation, Tom Corcoran brings to the Board experience in getting things accomplished in our Nation's capital. Welcome.

THE WHITE HOUSE

Office of the Press Secretary
(Warren, Michigan)

For Immediate Release October 10, 1984

The President has nominated Thomas Corcoran to be a Member of the Board of Directors of the United States Synthetic Fuels Corporation for the term expiring August 16, 1990. He will succeed Milton M. Masson, Jr.

Congressman Corcoran represents the Fourteenth District of Illinois and has been serving in the U.S. House of Representatives since 1976. He serves on the House Energy and Commerce Committee, the Fossil and Synthetic Fuels Subcommittee, and the Post Office and Civil Service Committee.

In 1974-1976, he was Vice President of the Chicago-North Western Transportation Company. Previously, he was the Washington lobbyist for Governor Richard Ogilvie of Illinois (1969-1972), and in 1966-1969 he was an administrative assistant to the Leadership in the State Senate of Illinois.

Congressman Corcoran graduated from the University of Notre Dame in 1961. He is married, has five children, and resides in McClean, Virginia. He was born May 23, 1939 in Ottawa, Illinois.

Mr. CORCORAN. Thank you, Mr. Chairman.

The CHAIRMAN. Our second nominee is Eric Reichl, an engineering consultant, internationally recognized for his contributions to the development of synthetic fuels. His distinguished career in coal research and development dates to the 1940's. A member of the National Academy of Engineers, Eric Reichl brings to the Board hands-on operating experience.

THE WHITE HOUSE

Office of the Press Secretary
(Warren, Michigan)

For Immediate Release October 10, 1984

The President has nominated Paul Webster MacAvoy to be a Member of the Board of Directors of the United States Synthetic Fuels Corporation for the term expiring September 14, 1991. He will succeed A. G. Monks.

Mr. MacAvoy is Dean of the Graduate School of Management at the University of Rochester in New York. He was a professor of economics and management at Yale Universitys in 1975-1976. Mr. MacAvoy was an associate professor for Science Management at the Massachusetts Institute of Technology (1963-1964). In 1961-1963 he was an associate professor at the University of Chicago. Mr. MacAvoy has authored numerous articles on economics and energy sources.

He graduated from Bates College (A.B., 1955) and Yale University (M.A., 1956, Ph.D., 1960, LLD, 1976). Mr. MacAvoy is married, has two children, and resides in Rochester, New York. He was born April 21, 1934 in Haverhill, Massachusetts.

The CHAIRMAN. Our third nominee, Paul MacAvoy, is dean of the Graduate School of Management at the University of Rochester. He brings to the Board extensive experience in the areas of energy, economics, and industrial management.

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release April 18, 1984

The President today announced his intention to nominate Eric Reichl to be a Member of the Board of Directors of the United States Synthetic Fuels Corporation for the remainder of the term expiring September 14, 1986. He would succeed C. Howard Wilkins.

Mr. Reichl is an engineering consultant. He was President of Conoco Coal Development Company in 1974-1978. In 1948-1974, he was with Consolidation Coal Company serving as Vice President for Research (1962-1974), Director of Research (1954-1962) and Research Manager (1948-1954). He was with California Research Corporation in 1946-1948 and Stanolind Oil & Gas Company in 1944-1946.

He is a member of the American Chemical Society, the American Institute of Chemical Engineering and the National Academy of Engineers. He was Chairman of the Coal Task Group, National Petroleum Council Energy Study in 1972.

He is married, has two children and resides in Greenwich, Connecticut. He was born December 3, 1913 in Vienna, Austria.

The CHAIRMAN. Since creation of the SFC in 1980, this committee has followed with considerable concern the slow pace of progress of the Synthetic Fuels Corporation in carrying out its statutory mandate. The principal objective of the SFC was to foster the commercial production of synthetic fuels and establish the infrastructure necessary for the industry to continue once the SFC went out of existence.

At the time this Senator, and indeed the Congress, foresaw an abundance of energy supplies in the mid-1980's and a softening of oil prices. What has recently been termed the "New Realities" is in fact the realities foreseen by the Congress.

Against this background, annually in budget hearings before this committee, the SFC has set forth a schedule for the award of financial assistance. Those schedules have yet to be met. Instead, today we have a program that is significantly scaled down from what was originally envisioned. But, this program can make a significant contribution to our Nation's energy security once final awards are made.

Recent actions of the newly reconstituted Board of Directors are encouraging. The current "Statement of Objectives and Principles" and the phase I business plan represent major steps forward, which recognizes the accomplishment of the Noble board over the last 4 years.

There now is a need, however, for the Board to act expeditiously on the so-called letter of intent projects for which $5.7 billion was initially made available in the continuing resolution for fiscal year 1985. That legislation placed these projects in a special category that requires priority treatment by the Board. Failure of the Board

to expeditiously address these projects would be contrary to the intent of Congress. These projects cannot be allowed to collapse for lack of Board attention.

When the agreement was reached last year on the rescission of $5.375 billion, another element of the agreement was that the SFC would be supported by the administration in meeting the statutory objectives of phase I and submitting to the Congress the comprehensive strategy provided for by law, and that this would be done without further interference from the Office of Management and Budget.

The current Board of Directors, which includes today's nominees, are there to implement that agreement, which is a matter of law. This may require a restructuring and rescoping of the program. But it cannot be allowed to circumvent the principal objective of the Energy Security Act: the demonstration of commercial scale synthetic fuels production. If the Congress had wanted a pilot plant or semiworks program it would have left the program in the Department of Energy. Instead it established the Synthetic Fuels Corporation.

With this as a background, I welcome the nominees before the committee and look forward to their testimony.

Senator Ford.

STATEMENT OF HON. WENDELL H. FORD, A U.S. SENATOR FROM THE STATE OF KENTUCKY

Senator FORD. I thank the chairman and I compliment him on his opening statement. It was extremely forceful.

Mr. Chairman, I am indeed pleased that this day has finally arrived. We are to act on three nominations for the Synthetic Fuels Corporation that will ensure a permanent quorum of the Board. And you, Mr. Chairman, more than anyone else, has carried us this far and I am grateful to you.

I certainly hope that these new nominees set the Corporation on a positive track. As a coal State Senator, I must admit that I have had nothing but a whole series of disappointments up to this time. However, hope springs eternal and I approach these nominations and the proceedings in that spirit.

I look forward to hearing the plan of the nominees before us on their strategy for the future of our Synthetic Fuels Program.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Ford.

I think, as each of you know, the rules of the committee which apply to all nominees that come before us for confirmation must be sworn in connection with their testimony. I will ask all of you to rise and take the oath together.

[Whereupon, Mr. Corcoran, Mr. Reichl, and Dr. MacAvoy were duly sworn by the chairman.]

The CHAIRMAN. I think you have all been informed that there are four questions that we address to each nominee that comes before us. I would like to ask each of you these questions.

Will you be available to appear before this committee and other congressional committees to represent positions of the Synthetic

Fuels Corporation and respond to issues of concern to the Congress?

Mr. CORCORAN. I will.

Dr. MACAVOY. I will.

Mr. REICHL. I will.

The CHAIRMAN. Your informational statement has been submitted to the committee, but it is required that this statement be made public unless the committee decides that special circumstances justify an exception.

Do you have any objection to the publication of your informational statement?

Mr. CORCORAN. No objection.[1]

Dr. MACAVOY. No objection.[2]

Mr. REICHL. No objection.[2]

The CHAIRMAN. Are you aware of any personal holdings, investments, or interests that could constitute a conflict of interest or create the appearance of such a conflict should you be confirmed and assume the office to which you have been nominated by the President?

Mr. Corcoran.

Mr. CORCORAN. No, I do not.

The CHAIRMAN. Mr. Reichl.

Mr. REICHL. I have all of the information submitted on the forms, and in any instances where any conflict of interest potentially might appear, this will be submitted to the SFC Board for determination and I will certainly abide by the decision in accordance with section 118 of the act.

The CHAIRMAN. Dr. MacAvoy.

Dr. MACAVOY. Senator McClure, I would make the same statement as Mr. Reichl. I will conform with rulings of my fellow Directors to remove any conflicts of interest by recusing me from taking part in operations of the Corporation under section 118 of the act.

The CHAIRMAN. Are you involved or do you have any assets held in blind trust, Mr. Corcoran?

Mr. CORCORAN. No, I do not.

The CHAIRMAN. Mr. Reichl.

Mr. REICHL. No.

The CHAIRMAN. Mr. MacAvoy.

Dr. MACAVOY. No, I do not.

The CHAIRMAN. Gentlemen, your statement will be placed in the record in full. You are invited to summarize or deliver that statement in whatever way you would see fit.

Mr. Corcoran.

STATEMENT OF THOMAS CORCORAN, NOMINEE TO BE A DIRECTOR, U.S. SYNTHETIC FUELS CORPORATION

Mr. CORCORAN. First of all, Mr. Chairman, I think we recognize there is something of a time constraint, so I would simply like to say that I appreciate the opportunity to appear before your committee. I want to thank publicly, of course, the President for show-

[1] See App. I.

[2] The documents were retained in committee files.

ing his confidence in me in nominating me to serve on the Board of Directors of the Synthetic Fuels Corporation.

As you indicated, our statements will be made a part of the record. I would simply like to say that in my judgment, synthetic fuels are of critical importance to our Nation's energy future. Mr. Chairman, as you indicated, we as a country committed ourselves to a public synthetic fuels program for the United States in 1980 and again in 1984. My personal belief is that we should do so again and again, until we establish a synthetic fuels capability for the United States of America.

The CHAIRMAN. Thank you, Mr. Corcoran.

[The prepared statement of Mr. Corcoran follows:]

Testimony of Tom Corcoran
Vice Chairman
U.S. Synthetic Fuels Corporation
Before the
Committee on Energy and Natural Resources
May 3, 1985

Mr. Chairman, Members of the Committee:

I am honored to be with you this morning. In addition to thanking you for your consideration of my nomination to serve on the U.S. Synthetic Fuels Corporation Board of Directors, I want to thank publicly President Reagan for the confidence he showed in me by this nomination.

Synthetic fuels are important to our nation's energy future. We committed ourselves to a public synthetic fuels program for the country in 1980 and again in 1984. I believe we should do so again and again until we establish a national synthetic fuels capability.

Mr. Chairman, I hope you and your colleagues will give your advice and consent to my nomination to serve on the SFC Board of Directors. My experience as Vice President of the Chicago and North Western Transportation Company, and my public service as a U.S. Congressman for eight years, give me unique qualifications for membership on the SFC Board of Directors.

My business experience, particularly as an officer of a large, "publicly held" corporation in the railroad business, gives me the "hands on" management background to help improve the efficiency and effectiveness of management at the SFC. Inasmuch as the SFC is a government corporation, the experience as a Congressman will be helpful to my service at the SFC in at least two ways. One, it has prepared me to be sensitive to the public interest considerations, which should be evaluated, not only in the decisions made at the SFC, but also in the manner by which the SFC conducts its business. Second, my responsibility as the ranking minority member on the Fossil and Synthetic Fuels Subcommittee of the House Energy and Commerce Committee, enabled me to learn about the policy issues pertinent to synthetic fuels.

Mr. Chairman, as you know, the compromise legislation enacted in 1984 reduced the Corporation's funding authority by 45 per cent and removed production goals as a consideration in the Board's Phase I project decisions. In November 1984, Paul MacAvoy, Eric Reichl and I were appointed to the Corporation's Board, and in December the Board met with a quorum for the first time in eight months.

The new Board moved quickly to reevaluate the existing situation and define the future direction of the Corporation:

- At the December 1984 Board meeting, the Comprehensive Strategy Committee was formed.

- At the January 1985 Board meeting, the Committee recommended and the Board adopted a Statement of Objectives and Principles setting forth the new Board's views, objectives and guiding principles.

- At the February 1985 Board meeting, the Committee recommended and the Board adopted a Business Plan, defining the resource-technology combinations that would have highest priority in the Corporation's project development and assistance process.

- At the March 1985 Board meeting, I gave my personal appraisal of the situation confronting the Board: most of the projects that had been under consideration were inappropriate under the conditions of 1985 and, in any case, were not ready to go without considerable reconfiguration and renegotiation. Most of the Board agreed with my assessment.

- At the April 1985 Board meeting, the initial draft of the Comprehensive Strategy was distributed to the public.

The draft Comprehensive Strategy builds directly on the Statement of Objectives and Principles and on the Business Plan. It begins by reviewing the energy outlook and the changes in that outlook since the Energy Security Act ("the Act") became law in 1980.

I do not need to remind the Committee that the energy outlook is different now from what it was in 1980. The critical point to remember is that the only thing certain about the energy future is that it is uncertain and will be full of surprises. Energy supplies will get tight again, and prices will increase again. The only question, to which nobody knows the answer, is when. Efforts to fix the roof should not be dropped just because it is slow work and the sun is now shining.

The draft goes on to summarize the important things that have been learned about synthetic fuels economics over the past five years. As always happens with complex technologies, cost estimates have increased as projects have become more fully defined, but experience has shown that projects can be built within the cost estimates and schedules based on detailed designs. It is now known that the cost of constructing a 50,000 barrel per day pioneer coal or oil shale project would be at least $5 billion, and perhaps much more.

There is not yet much actual operating experience with synthetic fuel plants, but what there is demonstrates clearly the wisdom of going slowly with new technology. Some of the pioneer projects have encountered technical problems that will be, at best, costly to fix. The nation will be much better off once it is known where the technical problems are and how to fix or avoid them. Experience with similar technologies suggests that unit costs can be reduced 30 per cent or more in the plants that are built subsequent to the pioneers. But the investors in the initial plants pay dearly for the privilege of teaching others those valuable lessons.

I am told there is a rule of thumb in the chemical process industries, to the effect that everybody wants to build the third plant using a new technology: let the first plant prove how not to do it; let the second plant figure out how to do it; and then the third plant can be optimized to do it at least cost. The job of the Synthetic Fuels Corporation is to help that first plant, and maybe the second, get built, so that the third will be ready to go. And so far, in many of the important technologies, we are still trying to get that first plant underway.

Putting together the changed energy outlook and the reality of pioneer synthetic fuels plants, it is neither surprising nor unfortunate that less progress has been made than was expected in 1980. Synthetic fuels are not likely to be competitive in the market for a decade or more, and there are large costs and risks associated with the pioneer plants needed to reduce the risks and teach the industry how to produce these fuels at costs that might then be competitive. Short of a true national emergency, it would be foolish for either private investors or the taxpayers to rush to build many large plants quickly.

The draft Comprehensive Strategy reviews the experience to date with the national synthetic fuels program begun in 1980. The Department of Energy moved quickly to assist three commercial projects that were ready to go before the Corporation was operational. All three have encountered serious problems:

- The 50,000 barrel per day (bpd) Colony shale oil project, which was cancelled by its principal sponsor (Exxon, which did not have assistance from DOE) after almost a billion dollars was invested; the guaranteed loan was repaid in full.

- The 23,000 bpd Great Plains coal gasification project, which cannot repay its $1.5 billion loan from the Department of Energy and is now asking the Corporation for price supports.

- The 10,400 bpd Parachute Creek shale oil project, which has encountered serious technical problems in its single-retort initial phase and has shelved plans for the larger second phase.

The Corporation issued its first solicitation for projects in December 1980 and began reviewing proposals in early 1981. Problems with the Corporation's Board caused some delay and uncertainty, but the principal developments affecting the program were the softening of energy markets and the reality of project economics. In this climate, the Corporation was unable to conclude agreements with any of the large projects that had been proposed, but did make awards to two smaller projects:

- The 4,300 bpd Coolwater coal gasification project, sponsored by an industry consortium primarily interested in experience with the technology; this commercial plant has been built, has begun operating successfully and is yielding valuable information that will significantly improve the cost and operating characteristics of follow-on commercial plants.

- The 5,000 bpd Dow Syngas coal gasification plant to produce both fuel and power within an integrated industrial complex, one of the "niche" positions in which coal gasification will first be economic. The project is on schedule and has encountered no significant problems.

This experience with actual pioneer plants suggests that the very large projects contemplated in 1980, such as the Colony and Great Plains projects actually assisted by the Department of Energy, are neither appropriate nor necessary under current conditions. Even though these plants are large enough to capture economies of scale and hence may require less subsidy on a "dollars-per-barrel" basis, the total subsidies required are huge. There is no reason to undertake such projects to produce oil that costs far more than it is worth today -- losing a little on each barrel but making it up in volume, so to speak. And as a way to gain knowledge and experience with the technology, such expensive monsters are not very cost-effective for either the industry or the government.

On the other hand, smaller projects, such as the Parachute Creek project assisted by the Department of Energy and the Coolwater and Dow Syngas projects assisted by the Corporation, are a different story. Using commercial-scale equipment, and built and operated by the private sector in a commercial setting, such projects can give the industry and the nation the experience needed, with much less risk of large-scale failure and at much less total cost -- even though the subsidies required to make these projects interesting to the private sector may be large on a "dollars-per-barrel" basis.

Another advantage of smaller plants that appeals to me, speaking as only one Director, is that they do not "lock in" the government or sponsors, technologically or financially, to a plant that must be kept operating indefinitely. Most of the learning in any pioneer project takes place in the first few years of operation. Whether a plant should be kept operating after that depends on many things that cannot be predicted now: energy prices and outlook at the time; operating costs; improvements made in the technology; the need for experienced project teams at this plant or elsewhere, etc. Large projects, with billions of dollars sunk in early versions of the technology and thousands of employees, would not be easy to modify technically or to shut down quietly if that is the best thing to do. It is likely that the government would be expected to keep these large plants operating indefinitely, no matter what, and that could be very expensive.

In addition to preferring smaller commercial plants in its program, the Board is looking for projects with special market situations that make synthetic fuels technology relatively economic in the near term. A particularly promising situation of this type arises in the production of electricity: compared to other ways of using coal to produce electrical power, gasifying coal to operate a combined cycle power plant is energy-efficient, allows generation capacity to be added in smaller units, and produces much less air pollution. Consortia of sponsors interested in developing a position in the market for such technology may be willing to undertake pioneer commercial projects on favorable terms to the Corporation; the Coolwater project is of this type, as are several of the others the Corporation is considering. These special situations can provide economical opportunities to develop the technologies that can be used to produce marketable fuels from coal when the market is right.

The draft of the Comprehensive Strategy discusses the feasibility and desirability of trying to accomplish the national production goal established by the Energy Security Act. The Corporation recognized early that this goal was impractical, and in the 1984 legislative compromise the Congress directed

that the goal not be a factor in the Board's project decisions in Phase I. The draft outlines what would be required to develop a large synthetic fuels production capacity in a crash program and recommends that this not be the near-term objective of the national synthetic fuels program.

There is no question in the Board's mind that synthetic fuels could provide most of the fuels the nation uses (and, for that matter, satisfy a large foreign demand) in an environmentally acceptable manner, and may someday do so. The issue is one of developing a strategy that will give the nation the capability to establish a large synthetic fuels industry if and when this becomes desirable; this would be a form of "insurance policy" against uncertain but potentially very costly events. However, as with any insurance, one must think carefully about how much of what kind of coverage to buy.

This notion of an "insurance policy" is the basis of the objective and strategy that will be recommended by the Board in the Comprehensive Strategy. If the Corporation invests now in a few projects that can reduce the risks and the costs of producing fuels cleanly from the nation's most promising synthetic fuels resources, the private sector will begin developing the know-how and the confidence to expand the industry when the market or national security concerns make this appropriate. These initial commercial projects should be large enough and should operate long enough to begin developing this private sector capability, but should not tie up any more capital than necessary or lock in early versions of technologies.

The strategy the Board will recommend will be, inevitably, a phased, sequential one. Whatever is done now, subsequent decisions will be made in both the public and the private sectors about whether, when and how to follow up, depending on what happens in the meantime to the energy picture, technology, etc. The important thing for now is to assure that the projects undertaken now will generate the knowledge and experience necessary to inform these later decisions. How much actual production might be accomplished by any particular date as a result of such a strategy cannot be predicted. It is in the nature of insurance that one does not know if or when one will collect, and, in fact, one is usually better off if the need to collect never arises!

In more concrete terms, the draft of the Comprehensive Strategy recommends that the Corporation continue implementing the Business Plan adopted in February, guided by the Statement of Objectives and Principles adopted in January. The draft provides more detail on the types of projects the Board expects to develop in each of the priority resource-technology combinations identified in the Business Plan, so I will not review them here. Instead, let me describe to you what we have been doing

to take some of the projects that were in the pipeline when the new Board arrived in December, reconfigure them in line with the Statement and the Business Plan, and in the process begin developing a program that will give the taxpayers a sound, cost-effective synthetic fuels "insurance policy."

The most dramatic examples of progress along these lines are in shale oil. The Parachute Creek, Phase II project has a letter of intent from the Corporation for $2.7 billion. The Phase I project using similar technology has encountered serious technical problems that are not expected to arise in the more advanced technology proposed for Phase II; however, that more advanced technology has never been utilized at commercial scale. Preliminary discussions between top management at the Corporation and at the sponsoring firm indicate that it may be possible to modify the Phase I project to utilize the advanced technology, at a small fraction of the cost of the full Phase II project. Whether Phase II should be undertaken in the future is a decision that can and should wait several years.

The Cathedral Bluffs project has a letter of intent for $2.19 billion. This project included some "modified in situ" (MIS) retorting, but was largely a mining and surface retorting project duplicative of the Parachute Creek Phase I project. The Business Plan identified MIS as a priority technology, but specified that a different surface retort and minimum mining were desired. The sponsors are now considering such a project, costing less than half as much as contemplated in the letter of intent.

In coal technologies, the Business Plan identifies several priority technology types, based on the different processing characteristics of major subcategories of the large coal resource. The Board has been encouraging potential sponsors to propose commercial projects no larger than necessary to demonstrate commercial-scale equipment in a commercial setting, and with sponsors willing to undertake the projects for the future technological benefits. This is a major departure from earlier plans, but I have been encouraged by the initial responses we have gotten from sponsors of projects currently under consideration and from sponsors who are interested in coming back to the Corporation now that they have a better idea of what the Corporation intends to do.

In conclusion, I am proud of the progress the new Board has made in four months and am confident that, given some time and leadership from the Corporation, we will be able to develop a set of cost-effective, commercial projects that will give the nation a sound synthetic fuels "insurance policy." We do not know yet what it will cost or how long it will take to develop the necessary projects, but I look forward to the challenge and to working with the Committee on it.

The CHAIRMAN. Mr. Reichl.

STATEMENT OF ERIC REICHL, NOMINEE TO BE A DIRECTOR, U.S. SYNTHETIC FUELS CORPORATION

Mr. REICHL. Mr. Chairman, I also would like to save time and refer to the fact that the statement I submitted is going to be in the record, and I have very little to add at this point, other than to say that I was pleased to have an opportunity to work with my other colleagues on the Board on the new objectives principles, on the business plan, and on the draft of the comprehensive strategy, and I will do all I can to bring it to fruition.

The CHAIRMAN. Thank you very much.

[The prepared statement of Mr. Reichl follows:]

STATEMENT

by

Eric H. Reichl

Committee on Energy and Natural Resources
of the U.S. Senate
on May 3, 1985

Mr. Chairman, Members of the Committee,

I am pleased to appear before you as Nominee of the President for the position of Director of the Synthetic Fuels Corporation. I would like to comment on three subjects:

First, a brief comment on my qualification:

I am a chemical engineer by training and spent virtually my entire career in areas closely related to synfuels technology or on Research and Development of synthetics. A unique opportunity to get a thorough grounding in the subject early on came for me with a 6 month tour of duty as civilian Navy Technician from December '44 to June '45. The assignment was the gathering of all available information on the German synthetic fuels industry including technology and R&D.

Since then most of my involvement came with my 30 years at Consolidation Coal Co. where the basic job was to secure and hopefully to expand the use of coal. Apart from using coal in power generation and steel making the conversion to gas or liquids was an obvious goal and my work offered ample opportunity to obtain hands-on experience with virtually all major coal conversion technologies. I retired in 1979 and have remained active as consultant since that time.

Second: I should explain why I agreed to serve on the SFC Board when asked in April 1984.

I had observed the many attempts to develop synfuels technology in the U.S. from 1945 onward. Fitful would be a good way to describe them. Even in the wake of the embargo and of the tremendous rise of energy prices no effective program or organization existed to do this job right. When the SFC was created it seemed to me to be a good vehicle to bring the synthetics technology to a position of true readiness, as an insurance against the time when the inevitably increasing imports of oil and gas could threaten the U.S. position.

I was not surprised to see the SFC falter and in difficulties as a result of the changes in the supply/demand balance of world oil which required a change in the SFC assignment. I felt my experience did indeed qualify me to help SFC move in the right direction, I was free to accept such an appointment, if offered, and finally I could afford the financial sacrifice it would entail. Therefore, when I was asked in April 1984 I agreed to make myself available. I was pleased to have been picked, but I never sought the appointment.

Third: I would like to give you my thoughts on what the SFC job should be and how it is to be accomplished. This must, of course, coincide with the objective assigned to the Corporation by Congress as I understand it.

All synfuels basically involve the processing of solids to produce fluids. The handling of solids involves uniquely difficult problems of scale-up; an order of magnitude more difficult than scale-up normally encountered in the handling of liquids and gases. Elimination of this risk cannot be done by research or pilot scale development. We need to build and run complete plants using full, commercial scale equipment which can then be safely replicated or expanded in the future.

This should be done for the major resource/technology combinations, leaving to the marketplace the ultimate choice of wide industrial use.

As you know the SFC has already moved in this direction and adopted a set of objectives and a Business Plan. The Board has also issued a draft of a Comprehensive Strategy which lists the specific projects which need to be done. I believe the available funds are adequate. I am in complete agreement with these goals and will do what I can to achieve them.

I hope this gives you an idea of my position and I am ready to answer your questions.

The CHAIRMAN. Dr. MacAvoy.

STATEMENT OF DR. PAUL WEBSTER MacAVOY, NOMINEE TO BE A DIECTOR, SYNTHETIC FUELS CORPORATION

Dr. MACAVOY. Senator McClure and other Senators, it's a great personal privilege for me to be reviewed once again by the Senate, my first opportunity since the end of the Gerald Ford administration, and I feel as if I'm being welcomed back from the far north.

My statement attempts to put my views as to the analytical foundations for proceeding with the development of synthetic fuels technology into the context of the Energy Security Act and the recent accord between the Senate and the Executive Office on how to administer that act.

I feel that what I am proposing to do as a member of this Board is in full agreement with the act as you have interpreted it in recent months, and would invite any comments on my statement or any questions that the Senate might have.

The CHAIRMAN. Thank you very much.

[The prepared statement of Dr. MacAvoy follows:]

UNIVERSITY OF ROCHESTER
GRADUATE SCHOOL OF MANAGEMENT
ROCHESTER, NEW YORK 14627

PAUL W. MACAVOY
DEAN AND PROFESSOR OF MANAGEMENT
PROFESSOR OF ECONOMICS
(716) 275-3316

STATEMENT OF PAUL W. MACAVOY BEFORE THE SENATE ENERGY COMMITTEE ON FRIDAY, MAY 3, 1985 WITH REGARDS TO CONFIRMATION AS A MEMBER OF THE BOARD OF DIRECTORS OF THE UNITED STATES SYNTHETIC FUELS CORPORATION

The Synthetic Fuels Corporation is at a critical point in its history. Both its critics and supporters are calling for significant changes albeit in opposite directions. The Congress itself has called for a much more exacting and challenging level of performance from the Corporation in order to reconstitute the Board of Directors. My statement presents analytical foundations for proceeding in the direction called for by the Congress.

The decision to undertake the development of synthetic fuels technology is an investment similar to those in past decades in nuclear reactor technology, semi-conductor development and air-frame development. Each has called for an element of public enterprise with additional government subsidies or price supports justified by "social returns" in excess of private profit rates on private sector capital outlays. At some point in time these social returns in each of the cases have involved national security. Synthetic fuels development has to be put into this context and evaluated on the basis of the total economy-wide gains and costs of investments in that technology. But it is still necessary to ask whether, as in the case of present day air-frame technology, private investment would achieve better results than federal projects at the present or near future stage of technological development. The approach taken here and by the reconstituted Synfuels Board is that at the present time government outlays are necessary to establish a working inventory of knowledge of synfuels technology to be used decades later in private industry investment decisions. Developing synfuels operating systems now in the "late" testbed and "early" demonstration plant stage with Federal assistance allows valuable knowledge to be used where it is economic for full scale commercial operating systems in the 1990's. Thus there are necessarily private and public elements of investment.

But a general case for some kind of Federal intervention does not justify any and all types of project in the final public program. Justification follows from comparing the "social returns" to the Federal portion of the total outlays on each type of plant, and choosing that set of projects that likely results in the greatest value of the net returns.

The first stage in an evaluation of such returns on public investment calls for establishing that there is substantial demand for synfuels technology in the private sector, in the

foreseeable future. This demand would come about when the projected costs of production of liquid hydrocarbons from synthetic fuel technology are less than the costs of development and extraction of crude oil and natural gas at the margin in the world market. There has to be a set of conditions in which this will occur for SFC synfuels projects to be economic as a basis for private investments in the 1990's or 2000's.

My view is that prospects are substantial for Synfuels technologies to be economic in that time period. This is established by the rough order of magnitude of future costs of gas and oil alternatives. The costs of producing crude oil and natural gas are increasing each year by the real rate of interest (otherwise it would be irrational for current producers to maintain their investments in inground reserves). Given that marginal costs are equal to present prices, and as marginal costs increase then prices will increase by commensurate amounts, then prices have to increase from two to three dollars per annum per barrel, either continuously or in a series of discrete steps.

After two decades, there would be a "crossover" in which costs of synfuels technologies without further development would be lower than then-current oil and gas prices. Synfuels plant outlays on capital of a thousand dollars per barrel, when amortized over a fifteen year plant lifetime, would come to only thirty dollars per barrel and operating cost outlays would not exceed twenty dollars per barrel. Total synfuels average costs per barrel would not likely be more than fifty dollars in total. Thus there is a market for synthetic fuel technology as a replacement for crude oil production. Given the oil price projections above, that market will be realized in the first ten years of the next century.

Moreover, there is a secondary market for this technology for "surge" capacity in the event of embargo or warfare derived disruptions in the supply of crude oil within the next twenty years. The analytical foundation is the same as for the long run crossover condition in the new technology. For a period of ten years of interruption of crude oil supply, the annualized capital and operating costs of synfuels plants per barrel of liquid fuel are less than the world market price (or "implied" price under rationing) of the substantially reduced supplies of crude oil and natural gas. But the occurrence of these conditions has to be given a probability of realization far less than that for the eventual crossover into the new technology in the next century. My view is still that a substantial probability has to be placed on the realization of "surge" demand, thereby increasing the potential gains from having the new technology available. When crossover results in synfuels capacity of a million barrels per day, such gains could be

very important for the private sector and thus the entire economy.

What then could a Federal development effort achieve if this is likely to be the free market course of events? The promise of the Synfuels Corporation's strategy is that technology can be further developed so as to reduce synfuels costs by predictably one quarter and perhaps as much as one third.

Such cost reduction would not be undertaken by the private sector for a number of important reasons:

1. the appropriability of the profit returns from the technology causing the cost reduction is substantially incomplete in the private sector, or would require the establishment of a monopoly in the private sector;

2. the research strategy requires parallel projects and diversification in projects that call for a scale of operations larger than that possible in the private sector;

3. the role of government enterprise in other countries is so substantial as to make acquisition of rapidly developing knowledge difficult or perhaps even impossible for private corporations in the United States.

For these reasons, the nationwide gains of more than ten dollars per barrel from a strategic plan of synfuels development would either accrue to public investment, or public subsidization of private investment, but not solely to private investment by itself.

The present value of the total of these gains justifies undertaking a synfuels development program of the magnitude found in the SFC Business Plan. This is because a successful program should cause adoption of the Synfuels technology in the crossover from crude production to take place at least ten years earlier, thereby saving ten dollars per barrel on roughly a million barrels per day for a ten year period. In current dollars, these gains from accelerating technology would exceed 3.5 billion dollars per year, which in present value of ten years accumulation comes to 8.7 billion dollars. The present value of the gains from the cost reduction for additional synfuels plants built during the normal crossover period after 2005 comes to another 3.5 billion dollars. These make up an amount substantially in excess of the prospective Synfuels Corporation outlays for construction and price supports in the Business Plan.

While subject to great uncertainty, these prospects from crossover still encompass substantial gains from the new

technology even if the adoption rate is lower or slower before 2000. That is, the present value dollar gains from national investments in synfuels are positive given a range of reasonable assumptions about adoption rates, prices, or costs. Rather it is only critically necessary to assume that current crude oil prices and synfuels costs are based on substantially all of the knowledge available at the present time on future supply and demand and that there will be no "surprises" in the form of large additional oil finds or significant synfuels technological breakthroughs in the private sector.

Even so the Synthetic Fuels Corporation has to change direction and develop along lines proposed by Congress in reconstituting the Board of Directors. The learning of the last few years is that first generation capital costs, environmental protection costs, and high interest rates all work against projects of the very large scale of fifty thousand barrel per day capacity. The implication is that the Synthetic Fuels Corporation should undertake more small projects, trading off learning from technology at large scale for gains from diversity, cost containment, and preliminary operations before full development. As an economist I support that change of direction, because we have undervalued the gains from diversification and over valued current knowledge of the technology. In any event, given the experience in reactor development, it is more appropriate that the full scale plant be undertaken by the first commercial enterprise. Following the Business Plan closely and cutting back to projects one third the size previously envisioned would result SFC outlays less than half of the amount now authorized. This reduced level of total outlays should be a target for the Corporation in its Long-Term Strategic Plan soon to be forthcoming.

As an advocate of reduced government in the economy, I support a rigorously designed, strategically controlled, and economically defensible Synthetic Fuels Corporation program of operations. But that is not a level of operations that would leave synfuels development entirely to the private sector, as the Corporation's critics would maintain. And that is not a plan for putting in place a quarter of a million barrels per day of Synfuels capacity by galloping through eight billion dollars of authorized project funding, as some advocates would maintain. The Synfuels Corporation should operate a portfolio of projects according to the example of such predecessors as Comsat Corporation and the wartime synthetic rubber development enterprise. This portfolio would be developed by closely analyzing each project to choose only those for which the present value of benefits from learning in the new technology are large relative to project costs. Putting such a portfolio in place should provide concrete future opportunities for private companies later on to increase the productivity of an important sector of our economy.

The CHAIRMAN. We are constrained for time this morning. I will ask just a few questions and then I am going to go over to the floor and see if I can get a little more time for us while all members then proceed to questions. But I will suggest that to the extent we can, members limit their questions on the first round, so that in the event we don't get an extension of time, we will all have the opportunity to ask some questions and will have some opportunity to hear and question the other witnesses who have requested the opportunity to appear.

In the event, of course, that we cannot complete our hearing in the time allowed to us, I suppose we may have to continue the hearing to a later date, although I hope that will not be necessary.

Let me ask a couple of questions of all three of you and ask for you to answer sequentially. And I don't, in the interest of haste, want you to shorten those answers unduly because I think you want to be on the record, you want to have the opportunity to state your positions.

I have stated and the Congress has stated—I restated in my opening statement that the principal objective of the Synthetic Fuels Corporation is to foster the commercial production of synthetic fuels in a demonstration phase, rather than research and development on a subcommercial or pilot plant scale.

Do you support that objective and the distinction between the objectives as stated, Mr. Corcoran?

Mr. CORCORAN. Mr. Chairman, yes, I do. I think it's essential that the Nation develop a capability for commercial production of synthetic fuels and that capability can only be developed through experience with commercial scale equipment, operated in a commercial setting by commercial firms.

However, as we all know, Mr. Chairman, under current market conditions, such commercial production experience is unlikely to be self-supporting, even in large plants with all of the economies of scale, and hence, subsidies from the Corporation are, in my judgment, necessary therefore to generate the needed commercial experience in a cost-effective way.

The Corporation should support plants that are no larger than necessary for the job, but should by no means revert to plants using subcommercial equipment or to pilot plants.

The CHAIRMAN. Mr. Reichl.

Mr. REICHL. I certainly agree with what Mr. Corcoran just said. I would like to add, maybe to help explain why this is so, a peculiarity of synfuels in a technical area is that we are dealing with solids. Really synfuels are involved, the conversion of solids to fluids, either gases or liquids to liquids. It is a notoriously difficult problem to extrapolate from smaller scale to larger scale equipment, and it is for that reason specifically that we must have full-scale equipment and full integrated plants in being in order to remove the risks for the private sector for future broad application.

The other reason, of course, is the proof of environmental acceptability of these plants. For that reason, we should have these plants sized to include these full-scale units, as Mr. Corcoran said. We will, however, try to keep these as small as is reasonable.

And if you will give me a second more, I think we are in the peculiar fortunate position in connection with coal because there is a

niche here where the synfuels overlaps with the use of coal and power generation, and we can come up with fairly small commercial scale plants that do not involve the production of 20,000 or 40,000 barrels a day of liquids, and we will take advantage of that.

The CHAIRMAN. Dr. MacAvoy.

Dr. MACAVOY. Commercial development is at the center of the Board's goal setting. It is difficult at times, Senator, to tell where test-bed operations end and commerciality begins.

It appears from our experience, or at least my experience over the last few months serving in an interim position, that it is also very difficult to determine ideal scale for a commercial operation. As a Board, it appears possible for us to set goals that will keep us centered on commercial development at the lowest feasible scale, given that the highest feasible scale projects now cost $2, $3, or $5 billion.

It is necessary, within the constraints of the authorized funding, to stay at the lower end of the scale.

The CHAIRMAN. Mr. Corcoran, in the past you have been critical of the level of SFC price supports that have been calculated on a per-barrel basis. Am I correct?

Mr. CORCORAN. Mr. Chairman, that is correct.

The CHAIRMAN. One of the potential consequences of rescaling projects is a potential loss of the economies of scale and, consequently, higher per-barrel subsidy. How would you justify rescoping of projects if that were the result?

Mr. CORCORAN. Mr. Chairman, first of all, my opposition to the high per-unit cost that was involved in the original program was based on the policy at that time, which was driven by the production goals and which meant that the Corporation was given the responsibility to in effect create a whole new industry that would be competing with independent producers of natural gas, for example.

I thought that was a mistake, and I opposed that. And I am pleased that the Congress and the administration did choose last year to revisit the policy for our Synthetic Fuels Program and to make substantial changes.

Second, with respect to the fact that the unit cost does go up when you have a sequential phasing of the development of these technologies, I think that is to be expected. In fact, I think what we have to recognize is that the learning benefits that accrue to a phased sequential deliberate development of these technologies are indeed substantial and we should not lock ourselves into a program whereby we cannot take advantage of those learning benefits.

The Rand Corp. has found, for example, Mr. Chairman, that there can be, with the innovative technologies that we are using, as much as a 30-percent savings benefit in the cost reduction for future plants.

Second, when you combine that with economies of scale, you have, it seems to me, an ample justification for what would be expected high unit costs at the outset, but as you bring these plants into full industrial development and production, then depending on market conditions, we believe—and I believe very strongly—that they will become competitive.

The CHAIRMAN. Mr. Reichl, in the past you have been critical of Federal programs to develop new energy technologies. What do you

see as an appropriate role of the Federal Government in energy research and development, particularly coal technologies and synthetic fuels?

Mr. REICHL. Well. Senator, of course I have over almost 40 years been involved on and off with synthetic fuel activities that have involved the Federal Government, beginning with the Bureau of Mines, through the Office of Coal Research, ERDA, and recently DOE. I'm still a member of the Energy Advisory Board over there, and have been involved with coal use problems there.

I think that the difficulty often arises that coordination between the Government and the private sector is not as good as it should be in order to achieve the results that I expected, which has led to difficulties in execution of contracts.

The problem became particularly difficult when the Department of Energy tried to go in the full-scale demonstration area and that in effect led to the creation of the SFC. And I felt that the SFC was a vehicle which was uniquely well constructed to bring the private sector into play the way it should act; namely, as selector of projects and also as the excecutor of the projects.

So I think that SFC is now a good framework of where this job can be achieved. And I will hope that we can do so.

The CHAIRMAN. Dr. MacAvoy, your public statement suggests that in your judgment, the financial benefits derived from projects must exceed their financial cost before you could vote for them.

For example, your statement discusses such a cost-benefit analysis. It talks about the gains that could be realized from accelerating synthetic fuels technology, are you advocating that this analysis be done on a project-by-project basis or a programmatic basis?

Dr. MACAVOY. Senator, I'm advocating that it be done on a programmatic basis, and that the cost-benefit framework be applied to the phase I business plan and indeed the follow-on strategic plan, so that the present value of the learning we gained from developing new technologies exceed the cost to the Government of the outlays on particular projects when summed together.

You cannot get a positive present value that is the maximum if there are individual projects in the portfolio that have no learning benefits. You can get very low learning benefits in individual projects, even below the cost of those projects, and still undertake them, if the learning results are highly correlated with other results of other projects in the portfolio.

Therefore, I would not apply in a strict, what might be called OMB fashion, the benefit-cost framework for individual projects. However, I would look for the correlation in the learning gains among projects as part of the process to get the overall impact of the program.

The CHAIRMAN. Thank you very much.

Senator Ford.

Senator FORD. Thank you, Mr. Chairman. I have questions for each individual and hopefully we can go around, and you can get an extension.

Let me then ask a question of each of our nominees. What is your considered opinion of any further reduction in funds available to the Corporation? And we will start with you, Mr. Corcoran.

Mr. CORCORAN. Senator, I think it would be a serious mistake for the Congress to take any further action to reduce the funding authority available to the Corporation at the present time.

As you know and has been discussed already this morning, the Congress, wisely in my judgment, reviewed the program last year. As a part of that review, there was a 45-percent reduction in the budget authority available to the Corporation. That's a major reduction.

Second, with respect to the aforementioned letters of intent, the Congress wisely provided a mechanism at that time so that if there were any savings as a result of Board action on the eight letters of intent, 50 percent of that savings would be returned to the Treasury. So that there is already in the current statute that guides our decisions, a provision which would return to the Treasury 50 percent of the money that might be saved.

Now, the tough question is, how much money will be saved? And, Mr. Chairman and Senator Ford, I simply at this point—could not indicate how much the savings would be. The reconstituted Board has only been in business for about 4 or 5 months. We have, as a result of congressional direction, begun to restructure, rescope, and review the projects.

In the case of several, the companies themselves, because this is a partnership between the Government and industry, have begun to do the cost analysis, engineering design and other analysis, and until we get the numbers and begin the negotiations on those particular projects. we won't know what the savings might be.

So there would be no way at this point, based on solid information, to suggest what kind of savings could be realized. And if there is any savings, the mechanism already in place would return it to the Treasury.

Senator FORD. Mr. Reichl.

Mr. REICHL. Senator, it is very simple. We came aboard after we had been advised that there was a rescission and we knew the amount of money that was available. We then adopted a plan which, in simple terms, proposes to demonstrate a test on the commercial scale which we defined a minute ago—those resource technology mixtures which we thought are the key to this country's domestic synfuel production—which is a set of plans covering coal, the various technologies, the various types of coal; the same for shale and for heavy oil tar sands.

In trying to assess the total costs of that program, we feel the amount available would be just about adequate. That doesn't mean, first of all, that all the projects which we would like to carry forward will see the light of day, and furthermore, we are obviously going to try in each case to reduce the cost to its minimum.

But, just like Mr. Corcoran said, we don't know at this moment what amount of giveback that will finally bring about, but the intent is to get the job done that we put forth in the business plan in the strategy listed in specifics there. And we'll do the best we can for saving money.

Senator FORD. Mr. MacAvoy.

Dr. MACAVOY. Senator, as a member of this corporate Board, I hear my Vice Chairman and the ranking operating officer sitting at this table telling me that it would be a severe impediment to the

flexibility of the development of this operating program to be cut back at the present time.

Corporate Board members should set policy; operating officers such as the Vice Chairman should advise the corporate Board member when the policy is going to hamper or destroy operations. I would add, however, that we are collectively reviewing each project continuously and that it is my own opinion, since you asked for my opinion, that we can do the portfolio of letter-of-intent projects for substantially less than the sum total of the published estimates of the costs of those projects, perhaps by one-third less, and there is even some chance that we could do them for one-half.

But I've already detected that certain of these projects, because of changing capital costs, because of changing environmental control costs, are going to cost more than the letter-of-intent published figure. Other projects are not likely to go forward.

Of the eight that were in place when you reconstituted the Board, three are now substantially eliminated. So that it could go either way, and Mr. Corcoran's argument that it is very early, with such great uncertainty, to make a specific cost cut is probably correct for good operating practice.

Senator FORD. So what have you just told me? [Laughter.]

Dr. MACAVOY. I told you two things; that as far as policy is concerned, we can set a target to come well within the total amount for the letter-of-intent projects as Board members, and leave it to the Chairman and Vice Chairman to hit those targets.

Second, that if we set a specific dollar limit equal to one-half of what is now there, we could severely hamper our provisions under that target because there is substantial and growing uncertainty as to what the costs would be of individual projects as they come closer to going into construction.

Senator FORD. Thank you, sir.

Mr. Corcoran, we were told last year that this was to be the year for coal at SFC. What coal projects are currently before your group? And what is their current status? And what will you be doing as it relates to eastern coal?

Mr. CORCORAN. Senator, I think that the progress we have made already in a very short period of time with respect to our very important coal resource justifies the promise that this would be the year for coal.

First of all, with respect to the business plan which we adopted earlier this year, we have identified several different resource technology combinations which we think should be demonstrated, and tested at a commercial scale in order to give us the synthetic fuels capability to finally develop the potential of the coal resources that we have in this country and particularly in the eastern part of the United States.

Let me say that one of the success stories of the Corporation thus far has been the progress that we have made with coal, and I would cite the cool water project as a good illustration of this, where we are converting coal into ultimately useful energy for the consumers in the California market area, and we're doing it in a way which is exceeding the expectations, both from a design operating standpoint and from the standpoint of meeting the environmental standards.

We are aware that there are additional projects needed in order to complete the portfolio of projects for a comprehensive program in the coal resource area. We took action to begin another solicitation to make sure that we do have projects in front of us to accomplish that. And finally, with respect to one of the very best projects that we have reviewed, the so-called keystone project which is focused directly on the eastern coal region, we find that the response of the sponsors to what the reconstituted Board has been seeking in the way of development of eastern coal has been very encouraging. We think that we can finally after years of promises, get a good project under contract on line, producing synthetic fuels.

Senator FORD. Thank you, Mr. Corcoran.

Mr. Reichl, I think it's obvious to everybody I am a coal State Senator, interested in promoting the increased use of coal.

Where am I likely to get the best buy for the buck? Out of the SFC or a clean coal-burning program?

Mr. REICHL. Well, maybe the first thing to do is to make a clear distinction between the two because it has confused a lot of people. I happen to be involved in both of those, and one has to be somewhat arbitrary because there is in fact an overlap between the two. And the best example of those is the cool water project.

The cool water project is a high pressure oxygen gasifier which is in that instance used to produce gas for a power unit which happens to be a so-called combined cycle power unit. It's been a very successful project and we are very proud to have a rather minor part in it as supporters of it. We inherited the job.

We are, as Mr. Corcoran said, in the process of issuing a solicitation which would probably create two or three of the same type of projects, however aimed specifically at the alternate technologies to achieve the same end. There would be other pressurized oxygen blown gasifiers to fit the peculiarities of eastern coals particularly.

I think in the synfuels area specifically, production of fluid fuels from coal today is an economically difficult goal. The key item, the flagship of the fleet, if you please, in the synfuels set of projects is Great Plains, in my view. In fact, I have been quoted at one time saying if we had only one project to support, that would be the one to build.

It is sized, of course, on the basis of a fairly large 23,000 barrel-a-day unit. You would not today select one that big, because economics have gone against it from the day it was first conceived.

So we should take advantage in the near term to limit our synfuels from coal to power generation primarily, not necessarily exclusively, but the problem is more difficult in the shale area.

I think your question was aimed at coal specifically. When it comes to the clean use of coal, of course, it is specifically not an SFC assignment, and we have tried to assure that that is properly covered in the DOE area. The specific way the DOE is planning to support the clean use of coal, of course, is up to that Department.

For your interest, there is an advisory board to the Department of Energy, which yesterday or the day before yesterday submitted its draft of the report on the recommendation how the Department should pursue that goal. And it is of some interest that in this context, the specific use of gasification as a cleaning device is included,

where it is a nonoxygen-blown, nonpressurized gasifier. I think the distinction is of some importance.

Senator FORD. Mr. MacAvoy, you've talked about cost effectiveness in other areas, to back up your image as a conservative economist, but do you believe there should be a dollar limit on the total amount of assistance that may be provided to any one project? And if so, what is that limit? And on what basis would you calculate it?

Dr. MACAVOY. I don't believe a dollar limit for any of the projects now before us or likely to be before us would be an effective or cost-effective policy to put into operation. It's very helpful to have a dollar limit on the size of the total portfolio of projects, but it is not helpful to have a dollar limit on an individual project. With the overall dollar limit, you've got to restrain yourself on the largest project, but if you faced a second limit on the largest project, you would overdetermine the system in a way likely to produce less than efficient results.

Senator FORD. Mr. Chairman, I have several other questions, and I'd like to submit those in writing. Apparently our time is going to be running very tight here this morning.

Senator WARNER [presiding]. We are advised that Chairman McClure is still seeking permission for this hearing to continue beyond the hour of 10:30. However, I think we'll have a second round.

Senator FORD. Fine. That's what I want to do. And, Mr. Chairman, I would like to have inserted in the record some remarks I have as it relates to low Btu gas projects, and I'd like to have it in the record following my questions.

Senator WARNER. Without objection.

[The questions and statement of Senator Ford follow:]

JAMES A. McCLURE, IDAHO, CHAIRMAN
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LOWELL P. WEICKER, JR., CONNECTICUT
PETE V. DOMENICI, NEW MEXICO
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D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510

May 23, 1985

The Honorable Thomas Corcoran
United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Dear Mr. Corcoran:

On behalf of the Committee on Energy and Natural Resources, I am acknowledging receipt of your responses to questions in connection with your nomination to be Member of the Board of Directors of the Synthetic Fuels Corporation.

However, please find enclosed copies of additional questions submitted by Senator Ford to you for response. We certainly appreciate your willingness to respond to the enclosed questions in a timely fashion. Please have all responses to us by noon, Tuesday, June 4, 1985, and supply the Committee with 40 copies of same. Your responses, and any inquiries regarding this request, should be directed to the attention of Richard Grundy, Senior Professional Staff Member, at 224-2564.

Sincerely,

Jim McClure

James A. McClure
Chairman

Enclosures

QUESTIONS FOR THOMAS CORCORAN

Questions submitted by Senator Ford

1. What priority is there for low-BTU gasification in your Phase I Business Plan? (Some have said that you are not interested in that technology.)

2. The Phase I Business Plan describes Coal-Water Slurries as being a technology upon which the Board "is still considering how best to proceed". The plan says there are significant and unique market obstacles to the commercial application of coal-water fuel technology in utilities and the Corporation is said to be looking for "appropriate innovative ways to use its authorities here. What is the problem here? Is it a technical problem, a market problem or what?

3. Who asked you to serve as a member of the Board? Was there ever any understanding or commitment that you entered into with either members of the White House staff or OMB with regard to your role as a director of the SFC?

Liquid Fuels

4. The Phase I Business Plan says that the Corporation will give some preference within the coal program to projects that include production of liquid fuels, but the plan also says that the emphasis will be on assuring that satisfactory technology is in hand to gasify under pressure, leaving it to the market to decide the type of product produced.

Question for Each Nominee

Questions submitted by Senator Ford

5. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable.

However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content will play in the SFC's program.

I would appreciate your comments.

JAMES A. McCLURE, IDAHO, CHAIRMAN
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WENDELL H. FORD, KENTUCKY
HOWARD M. METZENBAUM, OHIO
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JEFF BINGAMAN, NEW MEXICO
JOHN D. ROCKEFELLER IV, WEST VIRGINIA
FRANK M. CUSHING, STAFF DIRECTOR
GARY G. ELLSWORTH, CHIEF COUNSEL
D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510

May 23, 1985

Mr. Eric Reichl
United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Dear Mr. Reichl:

On behalf of the Committee on Energy and Natural Resources, I am acknowledging receipt of your responses to questions in connection with your nomination to be Member of the Board of Directors of the Synthetic Fuels Corporation.

Please find enclosed copies of additional questions submitted by Senator Ford to you for response. We certainly appreciate your willingness to respond to the enclosed questions in a timely fashion. Please have all responses to us by noon, Tuesday, June 4, 1985, and supply the Committee with 40 copies of same. Your responses, and any inquiries regarding this request, should be directed to the attention of Richard Grundy, Senior Professional Staff Member, at 224-2564.

Sincerely,

Jim McClure

James A. McClure
Chairman

Enclosures

QUESTIONS FOR ERIC REICHL

Questions submitted by Senator Ford

1) You say in your statement that you were not surprised to see the SFC falter and have difficulties when the oil supply demand situation changed which required a change in the SFC assignment.

Are you comfortable now with the SFC assignment as it now stands? Are you optimistic about the SFC meeting its new assignment?

2) What criteria would you advocate in deciding what the size of SFC projects should be -- commercial scale, large scale, or what?

3) What in your judgement is the future of direct hydrogeneration? What should the SFC be doing to foster the development of this technology?

QUESTIONS FOR ERIC REICHL

4. In light of your personal background knowledge of coal research and in particular your present role in development of DOE's clean coal technology report, I have a few questions.

a. Do you believe there is a need to develop near term clean coal technology?

b. Do you believe DOE's present research program is adequate to handle the near term needs of the coal industry for development of new clean coal technology?

c. Do you believe that the Synfuels Corporation should play a role in the development of such technology?

d. Do you believe the present charge of SFC is sufficiently broad to allow its participation in such development?

e. Do you have any recommendations as to how such near term technology should be developed either at DOE or SFC?

Question for Each Nominee

Questions submitted by Senator Ford

5. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable.

However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content will play in the SFC's program.

I would appreciate your comments.

JAMES A. McCLURE, IDAHO, CHAIRMAN
MARK O. HATFIELD, OREGON
LOWELL P. WEICKER, JR., CONNECTICUT
PETE V. DOMENICI, NEW MEXICO
MALCOLM WALLOP, WYOMING
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FRANK H. MURKOWSKI, ALASKA
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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510

May 23, 1985

Mr. Paul Webster MacAvoy
United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Dear Mr. MacAvoy:

On behalf of the Committee on Energy and Natural Resources, I am acknowledging receipt of your responses to questions in connection with your testimony on your nomination to be Member of the Board of Directors of the Synthetic Fuels Corporation.

Please find enclosed copies of additional questions submitted by Senator Ford to you for response . We certainly appreciate your willingness to respond to the enclosed questions in a timely fashion. Please have all responses to us by noon, Tuesday, June 4, 1985, and supply the Committee with 40 copies of same. Your responses, and any inquiries regarding this request, should be directed to the attention of Richard Grundy, Senior Professional Staff Member, at 224-2564.

Sincerely,

Jim McClure

James A. McClure
Chairman

Enclosures

Questions for Paul Webster MacAvoy

Questions submitted by Senator Ford

1) On page 4 of your statement you say that, "In any event, given the experience in reactor development, it is more appropriate that the full scale plant be undertaken by the first commercial enterprise. Following the Business Plan closely and cutting back to projects one- third the size previously envisioned would result in SFC outlays less than half of the amount authorized."

Does the Business Plan itself call for cutting back to projects one-third as large or are you simply advocating that projects be one-third as large as originally envisioned? (The plan seems to call for projects affording "commercial scale experience".)

Shouldn't the size of the project be dictated by the specific plant size necessary to achieve commercial experience with a particular technology?

2) Who asked you to serve as a member of the Board of the SFC? Were you given any instruction or did you make any commitments with regard to your role as a director?

3) As a conservative economist, did you have doubts as to the wisdom of the Federal Government subsidizing the development of synthetic fuels? At what point and why did you change your mind?

4) What do you hope to accomplish at the SFC?

Are you saying that all other things being equal, if two projects use the same gasification process but one converts the gas to liquids, that you will fund the one producing liquids? Are you sure that will be enough incentive to assure that the liquid products technology will be satisfactorily developed?

5. How do you go about determining what is the smallest plant that is commercial scale for a given technology?

6. If Congress were asked today to enact legislation that currently exists regarding the Synthetic Fuels Corporation, would you advocate its passage? Why?

Question for Each Nominee

Questions submitted by Senator Ford

7. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable.

However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content will play in the SFC's program.

I would appreciate your comments.

REMARKS ON LOW BTU GAS PROJECTS
SEN. WENDELL H. FORD
SFC BOARD MEMBERS CONFIRMATION HEARING
MAY 3, 1985

Mr. Chairman, I have noted with interest in recent weeks that the SFC seems to have awakened to the reality that they have a very significant opportunity to advance the synthetic fuels goals of this country by actively seeking proposals which use our vast high sulfur coal reserves. Coal gasification projects tied to utility and industrial users are the best market for synfuels in this country today. As a matter of fact, this has been the case for the last couple of years. And I am glad to see that the Board is finally trying to make some progress in this area.

Let me say as well, Mr. Chairman, that in this newly found enthusiasm for technologies which can process high sulfur coals, the SFC seems to have missed a synfuel from coal which I think they should go back and pick up. In Kentucky, we have large reserves of high sulfur coal and thousands of miners waiting for something to come down the road that can use high sulfur coal so that they can go back to work. This is a very high priority in my state and I want to make sure that the SFC doesn't miss any technology that gives some hope to my miners, shop owners, etc. that there can be an economic revitalization in the coal fields of Kentucky.

I think that it is imperative that the SFC fill out its slate of preferred projects by looking again at low BTU gas systems and actively work to get a good project before the Board. Low BTU gas systems are very attractive to coal based utilities that are looking for technologies that allow them to follow the varying demands placed on them by their customers. To date most coal fired plants are base loaded and operate at essentially constant power. To follow changing load on the utility, oil or gas units are generally employed. It would be a tremendous boost to my coal industry if a high sulfur coal technology could displace oil and gas for these intermediate and peaking purposes.

I believe that there is a technology out there to do this. And I encourage the nominees before us today to go out and find such a project. In my mind, the time is now to build the technological base to burn high sulfur coal cleanly and efficiently. The SFC should not leave one stone unturned as they try to make this happen.

Senator WARNER. Senator Evans.

Senator EVANS. Thank you, Mr. Chairman. I guess in my short time in the Senate, I have yet to hear a witness appear before the committee and suggest that the money available was too much, or all that was allocated by Congress couldn't be well utilized.

But I guess my questions will generally be addressed to anyone who chooses to respond. Although this is a hearing on you three personally and your confirmation as members of the Board of Directors, I suspect I share with my collegues no great concerns over the excellent backgrounds and record of each of you to carry on the responsibilities.

I think I share, however, some real concerns about the direction of the Corporation and how you choose to lead it. Does it make sense, even though we have had a significant cutback in total dollars—and, Mr. Corcoran, even though you suggested that it was a result of a congressional review, I can guarantee you that it was much more a figure pulled out of the air as a result of congressional compromise than it was really a real review of the total amount needed.

Does it make sense for us to even put $5 or $6 billion over the next few years into synfuel research when that is so hugely above the amount of research we are doing in other alternative forms of energy?

Are we out of balance even at this level?

Mr. CORCORAN. Mr. Chairman, and let me say, Senator Evans, having served in the Congress, and maybe I did euphemistically——

Senator EVANS. You understand the euphemism of "congressional review."

Mr. CORCORAN. I think we all understand how the process works and what the objective is, and I think that's what we have to focus on.

First of all, in my judgment—and I had the opportunity to serve for a number of years as senior Republican on the Oil and Gas Subcommittee in what I know is referred to as the "other body" here. And I would say that if you consider the support from the Government, both from the standpoint of expenditures through grants and from the standpoint of expenditures through tax assistance or tax credits, that there is an equivalent balance which I think does not favor greatly the synthetic fuels program.

Take, for example, the oil depletion allowance that factors into a decision for an independent producer when he or she decides to roll the dice to seek oil or gas. They get to write that off.

In the case of a synthetic fuels project where you have the upfront capital cost, when you encounter a dry hole there, you don't get the same opportunity provided by the Tax Code. So I think that an analysis that I would welcome by the committee or anybody of the comparative advantages would be desirable. But my own instincts tell me that there is at this point probably not undue favoritism toward synthetic fuels.

More importantly, however, I think you have to recognize that the energy marketplace is a very uncertain marketplace. I recognize and I'm sure you recognize, Senator, that today the rain has

stopped, the Sun is out, but that doesn't mean we ought to stop work on the roof.

I think that the synthetic fuels program, particularly as it has been restructured where the emphasis is not now on production capacity, but rather on the development of the synthetic fuels capability, warrants that we should make the investment. I believe that at some point we will exhaust our supplies of conventional oil and gas. When that will occur, I don't know. But I think the geologists will tell us.

And I think because of the critical importance of energy to our national economy and to our national defense, that it would be a mistake for us to allow ourselves to get into the same kind of crisis that we experienced before, and I think on that basis a prudent investment along the lines of the business plan and the strategy that we are developing today at the Corporation is very much in order, and I support it.

Senator EVANS. I think when you're talking about the discovery of oil or gas, you're in a different ball field. I'm talking more about the amounts we spend at the governmental level on the pure and then the applied research on alternative sources of energy.

I wonder, in fact I'm wondering with increasing intensity, whether it makes sense to put several billion dollars into one line of research and, for instance, be spending very little on hydrogen research, be spending not very much comparatively on the potential direct photovoltaic translation, some items of electricity. There are a number of other technologies for which there is very little money being spent.

Dr. MACAVOY. Senator, could I address some aspect of your very fundamental question about mix of energy research?

I would hope that you would include in that bag of things worth doing substantial additional outlays on conservation systems, on nuclear technology, including fusion in breeder reactors.

Senator EVANS. Indeed I do.

Dr. MACAVOY. Advanced converters. If you look across that mix, it seems to me to be possible to agree, based on empirical studies, that we are substantially underfunding nuclear reactor development in this country; that a good argument can be made for keeping hydrogen and photovoltaic research out another 10 years because commercial feasiblity appears to come in the second quarter of the 21st century.

Senator EVANS. Only because we're not spending very much money accelerating it.

Dr. MACAVOY. Well, that was certainly a very substantial reason, but there are demand reasons as well.

As far as our conservation systems research is concerned, the impressive amounts that are spent by manufacturers of energy utilization devices has kept them very high in the last 5 years. So in some sense, there's been a substitution of private outlays for public outlays in that area to very great effect.

Senator EVANS. There's a lot left to be done. We built—I was chairman of the Pacific Northwest Regional Power Council and our objective was to build a powerplant in the Pacific Northwest for the next 20 years. We didn't presume to know what the demand was going to be during that period of time, but we thought we

could identify the margins at least, and within those margins, obviously at the end of 20 years there is a substantial differential, and we identified pretty readily sufficient resources.

But in addition to that—and some of those resources did include major additions to central powerplants, basically coal or nuclear—but we also identified almost 9,000 megawatts of potential additional energy primarily from industrial and commercial conservation, from other techniques that we simply hadn't had the time or hadn't been able to get to in sufficient detail to make them part of the plan.

I certainly agree with you that we are a long way from the end of the road on better efficiencies, which I like to use more than conservation. And that's when the original budget for Synfuel came forward, and the goal of the 1½ million barrels a day capacity.

We can get that simply by adding 1 mile per gallon to the overall efficiency of our automobile fleet. And perhaps a consistent steady increase in the automobile fuel efficiency standards would get us more, faster, cheaper, than any other way of getting a very significant increased capacity through Synfuels or any other kind of research.

Mr. REICHL. Senator, you might not overlook, on the hydrogen question, that the major basic source of hydrogen would be coal gasification. Right now there is some interest in putting the hydrogen supply for the Cape Canaveral demand on coal.

So there is no disagreement between the ultimate outcome from Synfuel also serving the hydrogen future, if there is one.

I would like to also suggest that in looking at the number that looms large in everyone's mind when you hear it, it is the figure that we spent over a period of maybe 15 years, so the annual expenditures are of the order of magnitude of several hundred million dollars. Let's compare that with $450 million a year in fusion, which is perfectly reasonable.

Senator EVANS. I understand that we may well be limited on time, but at any rate, Mr. Chairman, I'll pass. I probably have a fairly significant number of written questions.

Senator WARNER. Thank you very much, Senator Evans.

Senator Johnston, your side now has the opportunity. I understand Senator Rockefeller has been here, but you make those decisions.

Senator JOHNSTON. I'll defer to Senator Rockefeller.

Senator ROCKEFELLER. Mr. Corcoran, I have a very healthy respect for you, but I am bound to pursue this question which I think to some extent you've already answered.

Over the last couple of days we've been doing a lot of sitting around on the Senate floor, and my chair is well padded, but there have been relatively few votes, and I've talked to a number of folks, none of whom are on this panel here, about your attitudes toward synthetic fuels during your service in the House, and the consensus was dramatic.

Now, it is entirely possible, reasonable, wise, and intellectually sound, for one to be able to come from here to here on a subject in a very short amount of time. Of course, I happen to agree where I believe it is that you are. In fact, I agree so much that it's probably

the greatest frustration in the energy field for me that we have not made more progress in the area of synthetic fuels.

I watched, as did Senator Ford, promising projects—although perhaps these days one might consider them too large in West Virginia and Kentucky—disappear after they were actually signed into law, not only in the Rose Garden of the White House in the previous administration, but also by protocols of agreement and all kinds of things at the State Department.

In any event, it is very important to this particular Senator from West Virginia that your commitment—and I see you, obviously, as the senior person of the three at the table—that it be genuine and real to synthetic fuel, not based upon an opportunity to provide service to the Government, which is a lot in and of itself, but that it's genuine, because there will come times when there will be those on this committee or in the Congress who want to dismantle, who want to put this back into the Department of Energy, who want to cut this or that, or who will make the clean coal $750 million fight more difficult, or use it to distract you from clean coal efforts or whatever.

I need to know again, in your own words, why this change is real and why—I hear your words about gas is running out. I hear your words about oil is running out. But, you know, everybody agrees with that and they say at some point in the future—and then others, free market people and others, simply say well, you know, those things; America is a great country and those problems will solve themselves in one form or another.

So synthetic fuels again goes to the back. The sun is shining this day, and people don't go up on the roof because there isn't any ladder, and that's the thing that concerns me.

As I said at the beginning, I have a great respect for you, and I accept your words, but I want to hear them again because I want to, when I vote for you, I want to know that the conversion and that the commitment is real from one who fought this only recently.

Mr. CORCORAN. Senator, I certainly understand your question. As a matter of fact, one of your colleagues, one of my former colleagues, chairman of the Energy and Commerce Committee of the House of Representatives, John Dingell, recently asked me the same question.

Let me say, first of all, there's been no change. Let me say, second, in that respect, I did not get knocked off my horse on the way to Damascus. Senator, I opposed the original program, and let me give you the background.

The legislation started in the House of Representatives in 1979, and that bill provided some $3 billion to develop coal and shale. I voted for that.

Now, I didn't emphasize that a few years ago, but I voted for that initial bill. It came back from the Senate with a strong endorsement of then-President Carter, with an $88 billion price tag, production goals, and I thought it was a mistake. We were in a crisis at that time, you will well recall, Senator. The Shah of Iran had been toppled. We were once again experiencing supply interruptions, and long gasoline lines. I recognized the need for action at that time.

But to solve a long-term energy problem where synthetic fuels would be useful, I thought it would have been far better to focus in 1980 on the current problem. The current problem could have far better been solved by deregulation and a change in Government policy on oil and natural gas. So, because of the price tag, because it was a flawed policy in my judgment at that time, concentrating on long-term solutions when near-term solutions were necessary, I voted against it.

As the senior Republican on the Oil and Gas Subcommittee, I spoke out, asking for a review of the program, because the successor to President Carter chose to accelerate what President Carter had begun with the deregulation particularly of oil. That stimulated the market. It had a very beneficial effect on supply and prices.

We are not today in a crisis. I argued then and I would argue today that it was appropriate in 1982, in 1983, in 1984 to have a review of the Synthetic Fuels Program. The administration agreed. The Congress agreed. It was changed. I didn't change; the law changed. And I am committed to that change.

Second, you referred to the bridge, or in my mind I thought it was a bridge; you referred to the ladder to go up to the roof. I think it's a good comparison. I would use a bridge. I would say that we need to continue the Synthetic Fuels Program under the mechanism, under the structure that the Congress in its wisdom—which I supported in 1984—developed.

If we do that, we'll have a bridge between the time when we exhaust our supplies of conventional oil and gas and when we need, because of market conditions, because of supply considerations, synthetic fuels. All the work that I've done in a short period of time that I served as a recess appointment at the Board of Directors, I think demonstrates my commitment.

Let me say, Senator, that particularly as it relates to your concern about coal, I think it's a tragedy that not more was done in the last 4 years. I think it's a tragedy, particularly for the coal industry, but as well for the shale industry, that we have this kind of potential energy and we have not taken the steps to develop it.

I am dedicated to correcting that tragedy.

Senator ROCKEFELLER. Pursuing the coal matter, the $750 million set-aside or compromise agreement on clean coal technologies gives the controllers of the $750 million—which I guess is the Appropriations Committee, or under the management of DOE or whatever—the chance to say, but look, Synthetic Fuels Corporation is meant to be doing that kind of work. It gives the Synthetic Fuels Corporation the opportunity, I would suppose, to say well, look, the $750 million which we don't control is meant to be doing that kind of work.

What kind of guarantees as a coal State Senator can I have that you, Mr. Corcoran, will find a way not to allow that confusion to happen and that there will be aggressive pursuit of clean coal technology?

I want to ask you, too, Mr. Reichl, because I am well familiar with your interest.

Mr. CORCORAN. Well, Senator, it has yet to be determined in a final way, as you well know, who will administer the Clean Coal Program.

Senator ROCKEFELLER. There's no money in it right now so it's a bit moot.

Mr. CORCORAN. When it is determined, then I think if the Synthetic Fuels Corporation has a responsibility in that regard, that we will carry out whatever the statute would provide.

However, based on the reality today, I think as you suggest, you will have to draw a clear distinction between the clean coal technology and synthetic fuels. Chief among our responsibilities at the Synthetic Fuels Corporation is developing synthetic fuels using the coal resource.

While I don't pretend to be a technical expert in dealing with that subject, it seems to me that there are some major differences that at least characterize one from the other. In the case of synthetic fuels, we are talking about chemical changes. We're talking about converting an energy solid to a gas or to a liquid.

In the case of clean coal, as I know from my experience in Illinois, and I am sure you know from your experience in West Virginia, the clean coal techniques are not necessarily chemical changes. You can wash the coal, you can separate out the pollutants as combustion occurs; you can do a number of things like that, but they are not the function of the Synthetic Fuels Corporation.

We have, I think, a very clear directive from the Congress as to the synthetic fuel technologies that we ought to examine. We are now in the process of considering projects to implement, and through our solicitation process to develop projects to implement. They are two different things. They are both important.

But my responsibility at the present time is focused on synthetic fuels and that's the way I will carry it out.

Senator ROCKEFELLER. Can I ask one more question, Mr. Chairman?

The CHAIRMAN [presiding]. Yes.

Senator ROCKEFELLER. Mr. Reichl, not giving you a chance to answer that, I wanted to ask one other.

There is a probability that the days of the SRC–1 and the SRC–2 sized programs are no longer realistic. Now, that's one statement.

The other statement I think you would agree with, and that is that we have to work at a much smaller scale in order to achieve breakthroughs in economies of scale.

However, there is a point, I suppose, at which research is done at such small levels, where projects are so controlled or so disciplined or so small, that whereas they prove a point, they don't attract commercial attention and, therefore, don't ultimately serve the Nation.

Where is that line that I worry about?

Mr. REICHL. It's a difficult line to draw sharply, Senator, but I think at this juncture we have exhausted pretty well the available knowledge, fundamental knowledge about coal chemistry engineering, and the only way you'll make progress from here on is to build plants big enough to where the full-scale equipment is tested and the major advance thereafter would be in the second and third plant you build as a copy of it.

That is basically the SFC plan today. It doesn't have to be 20,000 barrels a day. We can do it at 5,000 barrels a day. I don't think we need to belabor that point any further.

I don't know whether I've answered your specific question of what's the right size of research. The synfuels technology that we are pursuing has been thoroughly researched and piloted, and we'll make no advance until you go out and build a big one. A good example is the Union project. It was tested at a thorough scale of 1,000 tons a day for a long time. When it finally was built on a full commercial scale—it happens to be 10,000 tons a day—difficulties arose which we now have to cure.

That is really, I think, the job for the SFC program. That's why you need to build full-sized plants.

Senator ROCKEFELLER. Thank you.

The CHAIRMAN. Senator Warner.

Senator WARNER. Thank you, Mr. Chairman.

Mr. Chairman, I've had in my brief tenure in the Senate a strong identification with this Government entity, and I intended to continue that. I do believe, however, that once you're in place, you'll have my support, that you've got to work with Chairman Noble, as we say in the Navy, to batten down the hatches and get the ship underway.

You've got a good staff and they need direction and some firmness of decision. I believe there are too many things drifting around there that are inconclusive and they build in delays. Let's tighten up the management.

Are all three of you dedicated to do that and feel that that can be done?

Mr. CORCORAN. Mr. Chairman, I certainly want to say to our friend, the senior Senator from Virginia, that I'm committed to that. I think that management is a big problem.

Senator WARNER. Well, there's good reasons for what has taken place in the past, but now you're in place, let's give your Chairman support; let's get it going. The staff wants directions, and they want decisions. Make a decision on one project and move on to the next.

Mr. CORCORAN. Well, Senator, I think all that is true. But I will defer to a man much more skilled and trained in this field than I, and I'm sure he'll have comments on that. My own judgment is management doesn't just happen. Management requires leadership, the Board can give direction, and set policy, but organization is essential to carry it out.

I am dedicated to doing everything I can to see that that happens.

Dr. MACAVOY. Senator, I would only add that doubling the capability in the Chairman's office has already had a profound impact on the level of activity in the company. Also, that if you have the opportunity to review the public record on our open Board meetings, you will find that the conversations have become unusually sharp, because the members of the Board have been making public statements to the effect that we should get going and raise the level of productivity of this organization.

So it looks not only like some of its private enterprise counterparts, but looks even better than those counterparts.

Senator WARNER. Any comments?

Mr. REICHL. I feel a little bit, Senator, that the appearance that we are not making progress has outraced the facts. I think we are

making progress very well, and there are specific projects which are to be included in the business plan and the comprehensive strategy. All of them are in action at this moment, and I think the fleet is fully engaged, to use a naval term.

Senator WARNER. Let me just turn to the business plan, phase I. Are you convinced that the private sector is interested in the same kinds of projects that you have identified as important national priorities?

Mr. REICHL. I'm glad you asked that question, Senator. Yes, without any doubt. For each one of the specific projects that we have outlined in the comprehensive stategy, we are in active discussion with sponsors or sponsor. All of them have come across and in effect agreed with the purpose that we have outlined.

Senator WARNER. Do you two gentlemen share those views?

Mr. CORCORAN. Absolutely, Senator.

Dr. MACAVOY. Yes.

Senator WARNER. I've expressed to two of you—you may have a conflict, I think, Mr. MacAvoy—my concern about the coal-water solicitation. I continue to stand in support of that program. Where do you feel you are now?

Mr. CORCORAN. Well, Senator, we have reviewed the coal-water solicitation that began some time ago and the review produced a couple of consequences. This solicitation is still an active solicitation before the Board.

The first consequence was that we found that the private sector was already developing coal-water fuel mixtures for industrial boilers. So for that reason, the Board unanimously decided to suspend any further action on that aspect of the solicitation.

With respect to the use by electric utility boilers of the coal-water fuel mixture, the facts are less clear. We are reviewing those facts, but there are indication that some private companies are already in negotiations with the utilities to provide assistance to augment their programs, particularly with regard to supplemental power utilization.

As a result, it's not as clearcut at this point. But I think that there is a need to continue evaluating the coal-water fuel solicitation to see if it still makes sense, if it is still necessary to get a test burn for the utilities.

However, I would say that the coal-water fuel mixture as a synthetic fuel technology is not a big ticket item. We've got with coal and shale, as we discussed here this morning, some major activities that ought to be much further along than they are at the present time. Going back to the management question that you raised, Senator, it's a question of where we direct the resources of our corporation, not only the money but the people.

I feel that there are other major opportunities that we ought to address before we go back to the coal-water fuel mixture for utilities.

Senator WARNER. Well, you and I may have a difference of view on that. I'll follow along.

My time is up.

The CHAIRMAN. Senator Johnston.

Senator JOHNSTON. Thank you, Mr. Chairman. First of all, Mr. Corcoran, let me say that I have been especially commissioned by

Senator Dixon to come and present his views here. Mr Chairman, I would like to put into the record a statement by Senator Dixon.

He had a very longstanding commitment and could not be here. He wanted to be here to introduce you. But just to give you a litte flavor of what he says you are qualified and capable to be a member of the U.S. Synthetic Fuels Corporation. Tom Corcoran is qualified; he is also very capable; a graduate of the University of Notre Dame; has done graduate work at three of the finest graduate schools in the country, the University of Chicago, Northwestern University, and the University of Illinois.

It sounds like you're overeducated to me. [Laughter.]

Senator FORD. In Illinois.

Mr. CORCORAN. It sounds like the Senator is understandably prejudiced.

Senator JOHNSTON. He also says Tom can thus lend his expertise to our country on the subject of synthetic fuels and we can all benefit from his efforts, et cetera, et cetera.

He really likes you.

So, Mr. Chairman, I'd like for that to go in the record.

The CHAIRMAN. Without objection, that will be included in full in the record.

[The prepared statement of Senator Dixon follows:]

STATEMENT BY SENATOR ALAN J. DIXON
TO THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE
ON THE NOMINATION OF TOM CORCORAN
TO BE A MEMBER OF THE SYNTHETIC FUELS CORPORATION
MAY 3, 1985

Dear Mr. Chairman:

Today's hearing, as we all know, is to look at the qualifications of Congressman Tom Corcoran and to determine if he is qualified and capable to be a member of the U.S. Synthetic Fuels Corporation. Tom Corcoran is qualified. He is also very capable.

Mr. Chairman, most of your fellow committee members know Tom for his work on the House Energy and Commerce Committee, particularly as the ranking Republican on the Fossil and Synthetic Fuels Subcommittee during the 99th Congress. Tom has been one of the leading free market advocates in Congress. Tom Corcoran led the fight for the President's plan for the decontrol of natural gas. While I had some reservations about such a policy, I never doubted Tom's

intergrity, honesty, and sense of fair play. In fact, Tom Corcoran and I offered our own natural gas plan that included a contract carriage proposal.

I have known Tom Corcoran dating back to his days in Springfield from 1966 to 1969 when he was a Legislative Assistant to then Illinois Senate President Pro Tempore Russell Arrington. As the Illinois Senate Assistant Minority Leader, I was able to observe Tom first hand.

He recognizes our need to balance our petroleum imports with increased domestic production, both through conventional methods and the development of eastern coal and other fossil fuels through synthetic methods.

Tom Corcoran is a graduate of the University of Notre Dame. Tom also has done graduate work at three of the finest graduate schools in the country: the University of Chicago, Northwestern University, and the University of Illinois.

It is my hope that the Energy and Natural Resources Committee will approve Tom's nomination. Tom can thus lend his expertise to our country on the subject of synthetic fuels, and we can all benefit from his efforts.

Dixon Statement on Corcoran Nomination
May 3, 1985

Since we are considering other nominations in addition to that of Tom Corcoran, I would like to take this opportunity, Mr. Chairman, to say that I am troubled by the direction the new Synthetic Fuels Corporation Board is taking with respect to coal based synfuels projects and in particular its position on low Btu gas technologies.

The Phase I Business Plan explicitly states that transportation fuels will be given preference within the coal program. Low Btu is not a transportation fuel nor can it be transported economically by pipeline. Further, the expressed emphasis on pressurized gasification processes with an oxygen blown component also precludes support for low Btu gas technologies. From what I have heard from Illinois Power Company and others within the electric utility industry, being denied this option, is, in effect, the Corporation Board is ignoring a technology for which there is strong market demand.

Over the last four years, I have argued repeatedly that the Synthetic Fuels Corporation should place its priority on support for coal-burning technologies. The State of Illinois is a major coal producer and we have a wealth of reserves just waiting to be tapped. My sentiments are also based on a firm belief that our nation's coal reserves represent the most viable resource for synfuels development because they are relatively inexpensive and in abundant supply. The

impediments to coal use, largely environmental considerations, can be overcome with the right synfuel processes. Low Btu gas technologies can be a strong factor in fostering economic and clean utilization of coal.

It is my hope that during the confirmation proceedings for the new Synthetic Fuels Corporation Board Members, the Committee will explore this apparent prejudice against low Btu gas. I encourage the Committee to urge the Board Members to talk with representatives of the utility industry about the feasiblity and attractiveness of this product. At the very least, the Corporation should allow this technology to be considered, along with the medium Btu technologies being sought under the draft new Eastern Coal solicitation. It appears to me that the most prudent approach the Corporation could take is to allow the marketplace to determine its acceptability and commercial application. From what I have learned, there is strong appeal for a low Btu option. The Business Plan and subsequent comprehensive strategy should make allowances for low Btu gas.

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Senator WARNER. Mr. Chairman, I must leave. Could I put in some questions on low Btu?

The CHAIRMAN. Yes; those questions will be submitted for response to the record.

[The questions referred to follow:]

Questions for Each Nominee

Submitted by Senator Warner

1. Last year when Chairman Noble appeared before this Committee he assured us that 1984 was going to be the year of coal. Now it's 1985, and I want to know whatever happened to the year of coal.

2. I have expressed to you and other members of the Board my very strong interest in the Synthetic Fuels Corporation's supporting coal-water projects. I stand by that support. What is the status of the Corporation's Coal Water Solicitation and what is your view of it?

3. I commend you for the development of your Phase I Business Plan which specifies the kinds of projects you intend to fund. Where are you going to get the projects? In other words, are you convinced the private sector is interested in the same kinds of projects you have identified as important national priorities?

4. I am also concerned that there are certain other very promising technologies in which the private sector has an interest and is seeking SFC support, but the SFC does not appear inclined to support. I am thinking specifically again of coal water fuels and also low BTU gas.

I am told that the state of the art for Low BTU gas is at a critical threshold needing only a few short years of federal support to move it into the marketplace in late 1980's for

dimension of financial support is small in comparison to both new "greenfield" medium BTU gas project costs and the benefits to be derived by utility customers. I am concerned that in this period of a temporary glut of crude oil, that Low BTU coal gasification as an option for the utility industry could be significantly delayed because of the SFC decision to exclude this technology when we know a market will exist and for which we likewise know there are precious few options available. I urge the SFC to reconsider in their business plan a Low BTU gas option because I believe we must not ignore a significant coal utilization technology that can benefit electric ratepayers while at the same time contribute materially to the cleaner burning of coal. Will you reconsider the possibility of supporting Low BTU gas projects?

Senator JOHNSTON. Second, let me say, Mr. Corcoran, there is a degree of paternalistic jealousy about Synthetic Fuels Corporation in this committee. It began here, not in the House. The bill that passed was S. 932. It was designed by a bipartisan group in this committee. I had the honor under the mandate from our late great chairman, Senator Jackson, to serve as acting chairman of the committee in those days when we were in the conference with the House of Representatives.

And we remember every detail of how it came about, and we in the Senate think it's our baby, even though it may be in disfavor in some areas.

Let me further say that we recognize though some things may change in the country, at least attitudes, when the sun comes out. But I think I can say on behalf of other members of this committee, certainly on behalf of myself, and I think with some degree of confidence for the members of the committee, that we intend to see it through. We think the mission is a very important one, and all this talk you hear in the House about we're going to dismantle the Synthetic Fuels Corporation, we're going to do this, we're going to do that, in my view is just not going to happen.

For one thing, those have to come through this committee or through the Interior Appropriations Subcommittee of the Appropriations Committee, where the faces are exactly the same and where the commitment to the Synthetic Fuels Corporation is very solid.

So let me tell you, if you're worried about taking the job on the assumption that it's going to be derailed, I don't believe it will. In fact, I am absolutely confident it will not be, unless something unexpected is done by the Synthetic Fuels Corporation to make it seem that we ought to do that. And I am sure that you will not do that. I'm sure public confidence in your running the Corporation along with Ed Noble will be very good and very high.

I want to mention that because the compromise we put together last year under the leadership of our chairman, eroded much more than we wanted to the funding and the mission of the Synthetic Fuels Corporation, but it was a classic compromise. We gave a lot. The administration also gave its assurance that it would not only appoint the members of the Board, but it would see it through.

So we have a deal as far as we're concerned, and we're going to see it through. We're not going to let it be derailed. So I want you to remember that when you read these things in the paper. Just do your job and you'll have support here.

Second, let me say that I think what I have heard and what I have read from all three of you is eminently sensible. I know, Mr. Reichl, you have said some very sensible things about the clean coal-burning technology. I don't think you have gone into that today. But I'm glad you've gotten behind the Administration to tell them about the importance of that, even though that's not your job on SFC. I mean anybody who thinks that has got a lot of sense in my judgment.

Mr. REICHL. Thank you.

Senator JOHNSTON. Mr. MacAvoy, your comments not only about the Synthetic Fuels Corporation, but about nuclear energy and

other energy sources, happen to be exactly my view, so I think that's very smart for you to say those things, too.

I agree with you on nuclear energy. But let me just say this. The problem on nuclear is really not research so much as it is a system designed by lawyers, for lawyers, for the benefit of lawyers. It produces only paper and delay and doesn't attend to the matters of safety.

The chairman and I are just writing a letter to the Nuclear Regulatory Commission about restarting the TMI Unit that didn't break down. We are telling them they need to get on with the subject. After investigations of 5 years and I think it's 30,000 pages of testimony, they still haven't made a decision. And if that's not a classic example of a system designed purely for laywers, I've never seen it.

I used to be a lawyer before I got on the public trough. It's better over here. [Laughter.]

Senator JOHNSTON. But in any event, I really think that all three of you are good choices. Mr. Corcoran, your past record of appearing to be an opponent of the Synthetic Fuels Corporation, I think will really stand you in good stead because everybody will think Corcoran's over there; he's watching out and saving money.

And it's all right if you have a conversion on the road to Damascus. You know, you can have that conversion. Consistency is not highly valued around the Congress. [Laughter.]

And you know, you don't need to go back and read every statement you might have made about the Synthetic Fuels Corporation and make your present actions consistent with that. I hope you become a strong proponent of Synthetic Fuels Corporation, and I think you will, because the fact of the matter is, the mission is still a very important one. There's one thing I know about energy for sure. All the rest is kind of cloudy, but the one thing I know for sure is that we can't predict it very well.

I was on this committee, along with Jim McClure and Pete Domenici back before the 1973 oil crisis. We were studying energy at the time and we thought there might be some shortage. We knew we were running out, but no one, none of the experts in those days predicted the crisis. They certainly didn't predict the first oil shock, the second oil shock. We had witnesses, the big experts sit right in that place where you're sitting and tell us that there was no elasticity in demand based upon price, and they produced computer runs to prove it.

The degree of misinformation, miscalculation, and lack of prediction in energy, as I think each of you knows, is really appalling; it's amazing. And we know that much, that we can't predict.

So it is—if we never use any of these technologies, if they all turn out to be white elephants, it is worth it to the country in my view to spend those dollars to find out. And I believe that some day synthetic fuels from coal will be within economic bounds, as well as shale oil. And if they are, you will have done, in developing that technology, something for the country that far, far exceeds the amount of Federal dollars that are at risk. And if not, then it's worth the try.

We're spending on fusion over $1½ billion a year, Mr. MacAvoy. And I think that is much further out, much more chancey than

synthetic fuels. My guess is that we'll never have any development of energy from fusion, probably never, and if we do it probably will be beyond the year 2040 in terms of commercial terms.

Synthetic fuels, on the other hand, can be much more immediate.

By the way, Mr. Corcoran, on the question of those production goals, those weren't our ideas. Our friends in the House added those. We went along with them in the Conference Committee, not because we thought they were appropriate, but because we wanted to get a compromise and we thought they didn't do any harm. So that part's not our fault.

But let me say I will support each one of you. I think you will bring, each of you, a different area of expertise and different strengths. I continue to support Ed Noble as chairman, experienced now, committed to the goal. And I think now we can expect and look forward to some great things out of the Synthetic Fuels Corporation.

I hope it's sooner rather than later.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

There is a vote on the floor of the Senate. We will stand in recess, subject to the call of the Chair.

Senator FORD. Mr. Chairman, before you—you all go ahead and vote. I'll run. But one note I'd like to make here is, isn't it Cool Water instead of coal water?

Mr. REICHL. Cool Water is the name of the place where this plant is.

Senator FORD. A gasification plant.

Mr. REICHL. It's a high pressure, oxygen-blown Texaco gasification——

Senator FORD. We do have coal-water mix, and so I didn't want to get that—I wanted to be sure we were straight on that. And we have a commercial project now, Banklick project, I think, and it's Florida power that's using that. That's in commercial.

One of the things, Mr. Corcoran, on the legislation that I still go with when the House sent it to the Senate originally was, the Defense Production Act and we're still in that posture. We can save a mile a gallon, but we don't get to the hydrogen and other things we might need as it relates.

The demonstration to commercial of the SRC-1 plant, I was advised at one time that to demonstrate that plant, you would just have certain vessels. And then to make it a commercial plant, you would just add additional vessels to it.

Is there any truth to that statement?

Mr. REICHL. Well, the plant was designed to process 6,000 tons a day of coal. It would have produced roughly 20,000 barrels a day. That was already clearly a commercial size. Obviously, if it had come out and worked well, you might have then doubled that. But you would not have increased equipment any further.

Senator FORD. Well, what I'm thinking, though, if you had reduced that to 3,000 tons or 2,000 tons, and that showed promise as a demonstration plant in size, could we then have added vessels onto it and made it a full commercial-sized venture?

Mr. REICHL. Yes, you are quite correct, Senator. I think that the plant was unnecessarily large for its purpose and we could

achieved the same information by going to a considerably smaller unit.

Senator FORD. But the smaller unit could have been enlarged by addition of vessels?

Mr. REICHL. Yes. You simply build multiples.

Senator FORD. Just replicate it?

Mr. REICHL. Yes.

Senator FORD. Mr. Chairman, I have some questions I will submit to the three nominees. I don't need to ask them any other questions. I shall support all three.

The CHAIRMAN. Thank you, Senator.

The committee will stand in recess.

[Whereupon, at 10:55 a.m., the committee stood in recess subject to the call of the Chair.]

[Whereupon, at 11:15 a.m. the committee was reconvened.]

The CHAIRMAN. The committee will come to order.

Permission to sit has been granted and announced on the floor of the Senate, so we will be able to complete our hearing. I am happy to be able to announce that.

Senator Hatch is unable to appear to ask his questions, but he did want them asked, and I will ask one on his behalf, and submit the rest for the record.

The Energy Security Act specifically recognizes that Government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past 3 years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

I think each of you before has in one way or another answered that question, but on behalf of Senator Hatch I ask it again.

Mr. Corcoran?

Mr. CORCORAN. Mr. Chairman, I would say that the answer is clearly yes to Senator Hatch's question. He is, of course, correct that energy prices have not climbed ever higher, as was expected in 1980.

But on the other hand, the fact of the matter is that at some point we will exhaust our conventional supplies of oil and gas, and so it would be a mistake not to look now to alternative sources of energy.

The Synthetic Fuels Corporation exists to administer the program established by the Congress to develop additional energy supplies for the long term. And I think that the marketplace, which has been discussed already here this morning as being one of considerable uncertainty, suggests that it would be a mistake at this point, just because of a near term change in the pricing for conventional energy, for us to fall back into the pattern of being cyclical again and ignoring the longer term realities.

I think those long-term considerations suggest that this investment is necessary.

The CHAIRMAN. Mr. MacAvoy.

Dr. MACAVOY. Energy prices in the early 1980's, Senator, were displaced from the long-term equilibrium by the reduction of supplies from warfare in Iran and Iraq. We learned a great deal about short-term supply and demand conditions and found out that the

response, particularly of conservation on the demand side, was much more rapid and complete than we originally thought.

Based on that knowledge and my own highly individual opinion that energy prices, particularly oil and gas prices now, are at long-term equilibrium, that the long-term marginal costs of producing liquid hydrocarbons is very close to or approximate to present price levels.

Then, based on Hotelling's principle, that this is a stock resource which is held in inventory, I forecast that prices over the next 20 years will increase at about $2 to $3 per barrel per year. Based on those pricing conditions, my estimate is that the net present value of the Senate's compromise synfuels investment plan is about $12 billion.

The CHAIRMAN. Thank you.

Mr. Reichl.

Mr. REICHL. Senator, I think in addition, one could recognize the fact that not only all the major oil companies, but the Department of Energy also, all forecast that production, domestic production of oil is continually declining and that the imports are continually increasing, and that by the year 2000 we might import back about 7 or more million barrels a day of oil.

That doesn't mean we shouldn't bring them in. That's probably the cheapest source, even then. But the very existence of a demonstrated capability of producing this domestically, would be a clear-cut signal to keep the price level reasonable. And I think that's one of the major objectives of this program.

The CHAIRMAN. I would assume that declining oil prices have affected the level of supports necessary for any or all of the projects with existing letters of intent in order for them to remain viable.

How is the Corporation addressing that issue?

Mr. CORCORAN. Mr. Chairman, I would agree with that assertion that the change in the marketplace with now declining oil and gas prices suggests that the need to restructure those projects, even those in letters of intent, is indeed a desirable one.

As you can well remember, in 1980 the expectation was that from a cost standpoint, all the specific projects needed was access to capital, and that possibly there would have to be some kind of a safety net price support mechanism in rare instances.

Of course, now we know that is quite different. In fact, all of the projects to my knowledge are seeking not only access to capital, but in the main, they really want a safety net of price supports. And so on that basis, I think the restructuring that has been discussed here this morning, that's made very clear by discussed in our business plan, is desirable. If we can get the learning benefit, if we can get the data and the experience in a commercial demonstration of a particular technology with three vessels, three retorts or three gasifiers, there's no need—unless there is a crisis in the marketplace—to go to the full production size of, say, 25 vessels or 25 gasifiers or 25 retorts in a particular project.

So our intent is to use the same commercial equipment; in a commercial setting, with the product used commercially; but under the current circumstances, particularly because of the declining prices, and because the technologies, as explained here this morning, inherently have not advanced or are as mature as expected, we

have decided—and I think appropriately—to restructure and rescope these projects. And I think the result will give us the capability that the Nation needs in synthetic fuel.

The CHAIRMAN. Any other comments from either of the other two?

Dr. MACAVOY. For clarification, Senator, it is not that the project itself should be viable to determine the merits of the program. Rather, we would look for the probability that the project will be kept going for a significant period of time, long enough to establish the merits of the technology.

The scaling back of projects and the redesign is aimed at making sure that these are going well into the 1990's so that we can learn from them.

The CHAIRMAN. Senator Hatch had gone further, to ask if these projects will be economically unviable if no adjustments are made?

Perhaps you might like to rephrase your comments in the light of the comments you've just made. I can't adjust the question very well on his behalf.

Mr. CORCORAN. Well, I think, Mr. Chairman, that if what we were trying to do at the Synthetic Fuels Corporation was based on the law prior to 1984 in the original Energy Security Act, it would be very difficult to justify the expenditures in order to compete with the marketplace to produce a half million barrels of synthetic fuel by 1987 and 2 million barrels a day by 1992.

But the fact of the matter is, the law has been changed. We're not competing in today's marketplace; we're trying to demonstrate these technologies at a commercial scale to get the learning benefits. And as my colleague, Dr. MacAvoy, has indicated, that will vary according with the projects, but we want them to operate long enough so that we do learn what the problems are, what changes can be made when we need to replicate a particular technology or project one plants experience into a series of these plants, depending on market conditions, and so it's for that benefit, the long-term economic benefit and the long-term competitive comparison, that we believe the investment, as he indicated, is justified today.

The CHAIRMAN. Did the need for upward adjustment enter as a factor into the Board's decision to defer action on Seep Ridge oil shale project for 3 months?

Mr. CORCORAN. Mr. Chairman, the Seep Ridge project has been considered in depth by the Board on two occasions and we have looked at it from the standpoint of getting a report from the staff on its programmatic value, on how it compares with the business plan of the Corporation. And, of course, we've looked at it in the light of the fact that it is a letter of intent.

And as Senator Hatch has indicated in that and previous questions, changing market conditions, particularly with respect to price, have impacted the ultimate cost of that project.

We decided, in fact at my initiation a motion was made to defer for 90 days that project because, it, in my judgment, and I think it's a judgment shared by my colleages on the Board, should be integrated into our complete oil shale program, should not be considered as a separate individual project.

More importantly, the other two technologies, the above-ground retort and the modified in situ, we think should be addressed first,

particularly in this instance, where the same upgrader might be perhaps used for all three projects; we would be in a stronger position to make a decision to proceed on a more economical basis, and in a way which we think would give us the kind of capability in the oil shale resource which the country needs.

The CHAIRMAN. Thank you.

Senator Nickles.

Senator NICKLES. Thank you, Mr. Chairman.

Mr. Corcoran, a couple comments. One, I'm pleased that you're in line to assume the position as Director of Synfuels Corporation. That's quite a challenge, to say the least. I think I should let you know that—I know that you've heard a lot of support from a lot of the members of the committee for synthetic fuels in the Senate, and there is support for Synfuels Corporation in the Senate. There is also opposition, certainly both on the House and the Senate side, and that probably makes it rather difficult because I know that there's a lot of Senators who are very interested in synthetic fuels; there's a lot of Senators who are very interested in their home projects; maybe a lot of them more interested in their home projects and what kind of jobs that might create, than really the development of synthetic fuels.

I personally am interested in the development of synthetic fuels for energy security purposes. I'm not particularly interested in major Government outlays. And I think the two can be compatible. I think we can want to see synthetic fuel development, but there can be a question of where the funds are going to be coming from and what type of exposure that the Federal Government has.

I will even compliment Mr. Noble and some others in trying to reshape some of these contracts and letters of intent so we don't have such enormous exposure for the taxpayer.

You have how much money—authority, I guess, for additional projects now pending?

Mr. CORCORAN. We have approximately, Senator, $8 billion remaining in budget authority.

Senator NICKLES. Eight?

Mr. CORCORAN. $7.9 billion.

Senator NICKLES. $7.9 billion?

Mr. CORCORAN. Billion.

Senator NICKLES. Some of us had hoped at one time to have that be reduced by even a greater amount. We did rescind, what, a total I think—a total rescission of about $7.2 billion? Is that correct?

Mr. CORCORAN. That's correct.

Senator NICKLES. And it remains to be seen. There's bound to be some efforts—I expect this Senator will probably try to rescind some additional funds, so you might be aware of that.

I also compliment the chairman. I think one of the good things that was in the negotiations which several of us participated in last year was the fact that we would see a recission for some of these where the projects did not go forward, where at least half of that amount of authority would be rescinded. I think that was a positive thing.

I'm concerned primarily that we not get ourselves into a bunch—as really, according to your statement, you're also concerned about—getting ourselves into some massive projects that give us, I

don't know, anywhere from 20 or 30 or 40,000 barrels per day production, and then see the taxpayers paying $40 or $50 per barrel that is produced.

So, yes, we've built a great big demonstration project, if you want to call it, but taxpayers are going to be funding that for every barrel that's produced, maybe a price two or three times what the marketplace is. For those that are interested in this strictly as a jobs program—and I'm not saying all are, I'm not saying any are—I expect there is support for it for that reason—that's a very expensive jobs program. And I don't think that should be the purpose of the Synfuels Corporation.

When I see people talking about some of the lives of these projects—I'll just have to ask you some of them. The Great Plains project is, what, complete or——

Mr. CORCORAN. Senator, it's in operation right now.

Senator NICKLES. It's in operation?

Mr. CORCORAN. It has not reached what's technically called the in service date, but for all practical purposes it is in operation. It's producing pipeline quality gas. It's being used by consumers.

Senator NICKLES. Who's buying that gas?

Mr. CORCORAN. The pipelines involved as partners in the project are under a FERC tariff purchasing that gas at the present time

Senator NICKLES. I'm assuming where that's located, that would be, what, American Natural Resources?

Mr. CORCORAN. American Natural Resources is one. Mid-Con is another. Tenneco is a third.

Senator NICKLES. So they're paying market price for that gas? Are they paying, what, $3 for the gas?

Mr. CORCORAN. They're paying a price that's been approved by a FERC tariff and that price, as I recall, and I would have to submit this for the record, Senator, but as I recall that price is approximately $5 a million cubic feet.

Senator NICKLES. How much are the taxpayers paying per MCF?

Mr. CORCORAN. At the present time that project has a loan guarantee of approximately $2 billion from the Department of Energy.

Senator NICKLES. I thought the loan guarantee was $1.5 billion.

Mr. CORCORAN. No. The difference is that the loan guarantee is $2 billion, but thus far the project sponsors have drawn down approximately $1.46 billion of that guaranteed amount. And at the same time, because the project sponsors doubt the economic viability of the project, they have requested assistance in the form of a price support from the Synthetic Fuels Corporation and we are currently considering that proposal.

Senator NICKLES. On that price support, according to my information they're looking for a price guarantee of, what, $10?

Mr. CORCORAN. The proposal that's pending before the Corporation would, as you say, Senator, provide for a price support up to $10 an MCF for the first 3 years, as I recall, of the assistance and then it would be reduced to $6.50 an MCF.

Senator NICKLES. My information says $7.50, so it's $6.50 after three years?

Mr. CORCORAN. I don't have the numbers in front of me, Senator, but I believe it's $10 and then $6.50.

Senator NICKLES. OK. Would you provide that for the record?

Mr. CORCORAN. Yes, I will.

Senator NICKLES. What I'm trying to do—and, Mr. Corcoran, if you actually would do that, I'll take you through a couple of these projects. In the first place, let me tell you I'm not in the business of abrogating contracts. But let me also tell you, I realize the obligations we have existing, I realize that companies have invested billions of dollars in some of these cases, and I'm not really wanting to say let's walk away from those contracts if they're giving the loan guarantees, if they're giving the price guarantees.

But it bothers me to see us paying three times market price. In Oklahoma, we have gas we can't sell for $2½ or $3, and yet we're going to be paying $10 for every million cubic feet that comes out of this plant for 3 years, or possibly will be.

If on Great Plains, if you'd show me what we're doing now and what the prices are, because really we haven't learned that yet, what FERC has allowed for those prices, and then if taxpayers are making up the difference. If taxpayers are going to be writing the check for every million cubic feet, I'd like to know it.

Mr. CORCORAN. Senator, I'll be more than happy, of course, to supply that for the record. I do have in front of me an outline of the terms and conditions of the proposed assistance package. And with respect to the guaranteed price, for the first 2¾ years, it would be $10 per million Btu of gas; thereafter, it would be, as I said, $6.50 per million Btu, and this would be adjusted monthly for inflation.

[Subsequent to the hearing Mr. Corcoran supplied the following:]

Great Plains Product Prices

The guaranteed price currently under consideration is $10.00 per MMBtu through March 31, 1988 and $6.50 per MMBtu thereafter, in each case escalated with inflation. Price guarantee payments by the Corporation would represent the difference between such guaranteed price and market prices derived under the FERC tariff. In the SFC median case analysis, price guarantees would be paid through 1990.

Under the existing FERC tariff the price paid to Great Plains by the purchasing pipelines is effectively set by the price of No. 2 fuel oil during the first five years of operation and by the cost of the highest 10% of natural gas purchases of the pipelines thereafter. For March 1985 the average price thus established was $5.51 per MMBtu. The Great Plains production represents approximately 2% of the purchase of its pipeline customers. Thus, the FERC formula results at this time in an approximately 1% increase in the pipelines' average cost of natural gas.

Comparison of SFC Assistance to Great Plains

	April 1985 Understanding	April 1984 Letter of Intent
Aggregate Price Guarantees	$820 million	$790 million
Guaranteed Price (escalated with PPI)		
- Committed Equity Period	$10.00/MMBtu	$10.00/MMBtu
- Thereafter	$ 6.50/MMBtu	$ 7.50/MMBtu
Committed Equity Period	2 3/4 years (July 1, 1985 - March 31, 1988)	3 years from Closing
Additional Equity to be Invested/Reinvested by Sponsors	$190 million* plus net after-tax cash flow from April 1, 1985 through end of Committed Equity Period	$100 million* plus net after-tax cash flow from Closing through end of Committed Equity Period
Profit Sharing Payments**		
Prepayment of DOE-guaranteed Debt	90% of ATCF	90% of ATCF
Thereafter, to SFC	75% of ATCF	70% of ATCF
Test for Permitted Termination		
- during Committed Equity Period	Termination CATCF*** projected as of Dec. 31, 1989 more negative than minus $360 million	Termination CATCF*** projected as of Dec. 31 of any of the first 10 years after Closing more negative than minus $380 million
- after Committed Equity Period	Prudent business decision	Prudent business decision

* Payable quarterly during Committed Equity Period plus in each case interest on amount not yet invested at rate equal to 2% over 2-year Treasury Notes.

** Payable after Committed Equity Period and recovery by the sponsors of the $190 million/$100 million additional equity contribution; payments based on after-tax cash flows (ATCF) and, until DOE-guaranteed debt is paid in full, applied as prepayments thereof.

*** Cumulative after-tax cash flow plus tax cost of project termination.

Senator NICKLES. So it has escalators on it as well?

Mr. CORCORAN. Yes, it does.

Senator NICKLES. So for the first 3 years, we could see it escalate to $10 or $11 or higher.

Mr. CORCORAN. Yes, in terms of the incremental amount of the subsidy, that's correct. However, there is a limit in the proposed financial assistance agreement with respect to the amount of total obligation that could be forthcoming from the Synthetic Fuels Corporation. That would be $820 million in price guarantees available for 10 years from the so-called in service date, until the maximum has been reached.

So there is a limit to the proposed subsidy in the sense that it would not exceed, under the proposed contract, $820 million.

Senator NICKLES. You mention $820; it's interesting, my memo says $790. And I'm just wondering if we're getting—when we get updates if we find——

Mr. CORCORAN. Well, I agree that it does tend to change rather rapidly, as you know perhaps. I have certainly not at this point received sufficient information to decide whether or not I can support the proposal.

But the $790 million refers to the letter of intent that was executed last year. And the new proposal shows an increase, as you noted, from $790 million to $820 million.

Senator NICKLES. Let me go a little bit further, then. I stated I have some reservations against abrogating contracts when you have both public and private money at stake for these types of projects, especially in this case, since you actually have a plant that's really producing. But I also don't like seeing these price escalators or the price guarantees going up or the amount guaranteed going up. I don't like the exposure that we have as taxpayers. I'm glad that you have a limit.

So I'll move on to another project.

Mr. CORCORAN. Senator, if I might just add one comment——

Senator NICKLES. Sure.

Mr. CORCORAN [continuing]. So that the record is as complete as I can make it on this point. There is a contract involved, and that is the DOE loan guarantee contract. Under the proposal that's before us, the money that would be provided from the Synthetic Fuels Corporation to the Great Plains Gasification Associates would be used almost exclusively to pay down that debt. So that while there is the spread between the market price of gas and the FERC tariff and the spread between the FERC tariff and the assistance that we would give up to $10, almost all of that money would be dedicated under the proposed contract, to reducing that debt.

So in a sense, it's money going out of one Government entity into the——

Senator NICKLES. The taxpayers already loaned them the money to build the plant, and now the taxpayers will pay a subsidy to pay back the loan.

Mr. CORCORAN. That is the proposal. And it's currently being reviewed, as you probably know. One of the——

The CHAIRMAN. Mr. Corcoran, the taxpayers didn't actually loan the money, did they? They guaranteed the loan.

Mr. CORCORAN. Mr. Chairman, in this instance, the money comes from the Federal Financing Bank.

The CHAIRMAN. It came from the Federal Financing Bank; it didn't come from the Synthetic Fuels Corporation.

Mr. CORCORAN. No. No money—there is no money in the project from the Synthetic Fuels Corporation.

Senator NICKLES. Well, it came from DOE. Wasn't that——

Mr. CORCORAN. It's a loan guarantee from DOE, but the actual money comes from the Federal Financing Bank. It's not, Mr. Chairman, like an SBA loan where the money would come from a local bank and it would be guaranteed by the SBA. This is different. This is Government money that's been invested and it is probably going to be regarded as a sunk cost.

Senator NICKLES. And that's the $1.46 billion.

Mr. CORCORAN. That's correct.

Senator NICKLES. And they could also draw up to, what, $2 billion? So they have another 500——

Mr. CORCORAN. Slightly over $2 billion. But they cannot draw any of that additional available loan proceeds once they reach the "in service" date.

Senator NICKLES. Are they in that stage?

Mr. CORCORAN. Pardon me?

Senator NICKLES. Are they in that stage?

Mr. CORCORAN. They are not in that state today, but it's expected that sometime either later this month or next month, they would reach that point. And that's pursuant to an agreement between the Department of Energy and the sponsors.

Senator NICKLES. Another project that's in——

The CHAIRMAN. Senator Nickles, I want to ask some questions about the Great Plains. Would you like me to——

Senator NICKLES. Certainly. Please. No, go ahead.

The CHAIRMAN. I thought maybe it might flow better in the record if we addressed all the questions at the same time on that project.

I think it's useful as a matter of backdrop, to remember that the evolution of the law first initiated in the House was a Defense Production Act kind of activity being run through the Department of Energy. The Senate proposal was the Synthetic Fuels Corporation, which would be quite different fromt the Defense Production Act authority. The compromise between the two positions in the conference set up a program which was initially administered by DOE and then transferred the remainder, along with projects, to the Synthetic Fuels Corporation.

Great Plains was started by DOE under the Defense Production Act authority and then transferred pursuant to the law to the Synthetic Fuels Corporation. So you have the Synthetic Fuels Corporation taking over what was started by Department of Energy.

That, as has been described, was originally a loan guarantee, and the proposal now before the Board would be to use a price guarantee as a means by which the loan guarantee would be repaid.

Is that not correct?

Mr. CORCORAN. That is essentially correct, Mr. Chairman.

The CHAIRMAN. I think, too—Mr. Reichl?

Mr. REICHL. Just for clarification, I'd just like to bring out, when the decision was made to build this plant and the FERC tariff was established, under the price structure in the world as it was then, it seemed of course that there was no further subsidy required. The whole problem has arisen because oil prices, contrary to expectation at that time, have dropped dramatically and therefore the group is in trouble.

The CHAIRMAN. I think it would be fair to say that the price that you're now negotiating is not far from some of the prices being paid in the market at the time this project was conceived. Some of the deep gas contracts in particular.

Mr. REICHL. That's correct.

The CHAIRMAN. Isn't that correct?

Mr. CORCORAN. That would be correct, Mr. Chairman, especially with respect to the so-called deep gas, below 15,000 feet.

Mr. REICHL. If I recall, the FERC tariff rides on the price of No. 2 fuel oil. That was the peg on which it was——

Senator NICKLES. If the chairman is finished, I——

Mr. CORCORAN. Of course, Mr. Chairman, I would say that nobody would enter into that kind of contract today.

The CHAIRMAN. No.

Senator NICKLES. That's exactly what I'm trying to point out, and that's one of the things that I object to with this corporation is the fact that we have basically politicians or non-elected bureaucrats making decisions, and many times making decisions that the marketplace just flat won't support.

And the taxpayers end up, and will end up—and if we're not real prudent with the additional $7 billion that you have—will be paying for it for a long time to come. And that is a very serious concern of mine.

The private sector in many of these cases, in many of these projects, have walked away from these projects because market conditions have changed. And, granted, 5 years ago, several of these projects looked like they might be able to carry with very little subsidy.

And I agree with Senator Johnston. I don't know what energy prices are going to be 5 years from now. But I am concerned about the liabilities that are coming.

I have just a question or a comment maybe that you——

Dr. MACAVOY. One more clarification, Senator?

Senator NICKLES. Certainly.

Dr. MACAVOY. With respect to the Federal balance sheet, if you could conceive of such a thing—unfortunately, we don't have one—then nonpayment——

Senator NICKLES. It's obvious we don't have one. That's part of our problem today.

Dr. MACAVOY. Nonpayment of the SFC price guarantee would reduce Federal assets by $1½ billion because the loan would default and would be shown as eliminating a liability and an asset.

Payment of the loan guarantee will have no balance sheet effect and no income statement effect, because the payment out of the SFC funds goes into the FFB Bank.

Senator NICKLES. You're taking funds from one taxpayer entity and repaying a Government loan.

Dr. MACAVOY. Same taxpayer entity; two different categories of the income statement.

Senator NICKLES. But the net result in this case, the net result in this case is, yes, you're paying back with taxpayers' funds an obligation which is already incurred.

Dr. MACAVOY. And the payment——

Senator NICKLES. And you're saying the net result is zero. You're also showing it as an asset——

Dr. MACAVOY. The payment is equal to the receipt, Senator.

Senator NICKLES. You're also showing it as an asset of $1.5 billion, and if you didn't have Government subsidy you couldn't get anybody to go out and pay $1.5 billion for that, so you have an overvalued asset that the marketplace wouldn't give you that for.

Dr. MACAVOY. That's correct.

Senator NICKLES. That is correct.

The CHAIRMAN. It's a little like some of those contracts for deep gas.

Senator NICKLES. And we are struggling with some of those contracts for deep gas because a lot of those are being abrogated and a lot of them are being rewritten. So the marketplace is making some adjustments in those areas. We find ourselves obligated here.

My main concern is not so much with the Great Plains project, but it's seeing that we don't have more Great Plains projects and those types of liabilities. That's my point.

I'll make a comment that I received from Senator Metzenbaum's staff and ask you to comment on it. It says within the last 2 months, the sponsors of the Great Plains projects have written to DOE and said that even if they received the synfuel assistance, they couldn't guarantee that the DOE loan would be repaid after the subsidies are exhausted.

Is that correct, or do you know?

Mr. CORCORAN. Senator, I think that is correct. The terms of that contract between Great Plains and the Department of Energy require the sponsors from time to time to make an assessment about their ability to repay that loan. And I have seen, I believe, the letter to which you refer.

And that is one of the reasons, among others, why at our last Board meeting, some of the Board members, including myself, felt it would be desirable for an independent analysis to be made of the proposed financial assistance agreement; because we have to look at this from the standpoint of the impact on the Government as a whole and in this particular instance, attributed I think in part to the way in which the Government got involved in the first place.

As Chairman McClure indicated, we now believe that this is not simply an SFC problem. They are asking for assistance from the SFC, but it's a problem that goes much beyond that, and we are asking for an independent analysis so that we would have additional information on the basis of which we could make an informed judgment.

Senator NICKLES. So the sponsors have basically said, even if we get the guarantees for the next 10 years, we won't be able to pay back the $1.4 or maybe $2 billion worth of loans?

Mr. CORCORAN. Senator, I don't think they've said it that definitively. I think what they have indicated is that there is a problem

or the possibility that they won't be in the position to do that because of their price forecasts for the cost of energy during that period of time.

And that is why we think it's imperative that there be an analysis from the standpoint of DOE, as well as from the standpoint of the Government as a whole, because we are concerned that there may be other ways which would better serve the interests of the Synthetic Fuels Corporation, which is to demonstrate at a commercial scale level these technologies to in effect buy the experience you get from a demonstration of these technologies.

That's our charter. I don't think our charter is to pay off somebody else's loan. But on the other hand, we've got a difficult problem. There may be other ways in which to do it. For example, it's very possible that the better way would be to have the terms of that current contract with DOE extended, renegotiated in some way. That's done in private industry. As you indicated, it is, I think, very important; I think the Congress, particularly in 1984 in some of the changes that were made to the statute governing this program, indicated that we've got to be more attentive to what's going on in the marketplace.

Arco, as you know, recently did some restructuring and we think it's only appropriate that the same kinds of analysis, same kind of restructuring, be applied to the projects that are being considered by the Corporation.

But let me close with one point. And that is, it's much easier to restructure a project before it's built. It's much easier to restructure and rescale a project when it's in design. But once you have, as in this instance, a project that's in operation, then you're looking not at estimates but you're looking at actual numbers, and that has to be factored into our decision.

Senator NICKLES. I understand that. And that's, I guess, all the more reason why—I don't really have time—I've got an amendment on the floor that I need to participate in the debate on, but——

Mr. CORCORAN. Does it involve this subject?

Senator NICKLES. No; you're safe. [Laughter.]

Senator NICKLES. I may address your subject shortly. The bad part about it is, I can't get much in outlays or else you would really have a more difficult time than you are with me right now.

The CHAIRMAN. I would at this time, if there is no objections, include in the record a summary of the understanding between representatives of the Great Plains and SFC as of April 22, 1985 which can be characterized, I believe, as the proposal now pending before the Board.

[The summary of understanding follows:]

Summary of Understanding Between
Representatives of Great Plains and SFC
As of April 22, 1985

Current negotiations have resulted in an understanding summarized below that would provide SFC price guarantee assistance under terms that are substantially congruent with those contemplated by the April 1984 letter of intent. In particular, there would be substantial additional equity commitment by the sponsors which, together with all cash flow until March 31, 1988, would be applied to the prepayment of the DOE-guaranteed FFB loan so as to enhance long-term project viability after price guarantees end. The rights of the sponsors to abandon the project during this initial reinvestment period would be substantially more restrictive than those under the existing DOE agreements.

SFC Assistance. Maximum of $820 million in price guarantees, available for 10 years from in-service date or until the maximum has been reached.

Guaranteed Price. Until March 31, 1988, $10.00 per million Btus of gas; thereafter, $6.50 per million Btus, adjusted in each case for inflation.

Additional Equity. During the period from April 1, 1985 through March 31, 1988 the sponsors would invest an additional $190 million of equity, and that additional equity plus all after-tax cash flow, including all sponsor tax benefits, during the period would be applied to the prepayment of the DOE-guaranteed debt.

Profit Sharing. After March 31, 1988 the sponsors would be entitled to recover their $190 million additional equity out of project cash flow; thereafter 90% of after-tax cash flow would be applied to prepay remaining DOE-guaranteed debt as long as any is outstanding. Thereafter the project would make profit sharing payments to SFC equal to 75% of after-tax cash flow.

Senator NICKLES. Mr. Chairman, may I have a copy of that?

The CHAIRMAN. Surely.

Senator NICKLES. Mr. Corcoran, I have a couple of other questions. There's a lot of other big projects where letters of intent have been, I don't know exactly where their stages are, excecuted or what—one is Cathedral Bluffs, one is Union Two. What's the status now with the Union Two project?

Mr. CORCORAN. Senator, in the case of both of those letters of intent which are more at a design stage than the project we've previously been discussing, we are engaged in a very serious, in-depth review and restructuring of those projects, within the original letters of intent.

We believe that——

Senator NICKLES. Let's take that—Mr. Corcoran, if you could—on Union Two, they were originally looking for a letter of intent, or the letter of intent was signed for a price guarantee of up to a maximum amount, I guess that's up to a maximum amount of $2.7 billion?

Mr. CORCORAN. The letter of intent is at the level of $2.7 billion for that project.

Senator NICKLES. And that's, what, 42,000 barrels per day plant?

Mr. CORCORAN. That is my understanding.

Senator NICKLES. Is it Union's intent, are they going forward with Union II, or they're hoping to?

Mr. CORCORAN. Well, they're certainly hoping to, but as you probably know, Union, phase I, has yet to work on a sustained basis. They've had some very serious startup problems, but as my colleague, Mr. Reichl, pointed out earlier, that's in the nature of a learning experience.

And I share his view that in this particular instance with the Union project, the country and certainly Union Oil, or Unocal now, has learned quite a bit. And in this instance, there has been no taxpayers' money involved.

Senator NICKLES. In Union I?

Mr. CORCORAN. The Union I project is a price support program, which of course would only come into play if they were producing a product. They're not doing that yet. No decision has been made, Senator, on phase II, but I think it's pretty clear to all concerned that the original letter of intent will be far different from whatever final agreement is reached on that project.

Senator NICKLES. The price support which was being——

Mr. CORCORAN. It is important to add that we definitely want to keep within the parameters of the letter of intent, to continue the project under its letter of intent.

But I'm responding to your concern about cost, and you can be assured that the dollars involved will be probably a fraction of the letter of intent.

Senator NICKLES. I would hope so. The original letter of intent price guarantee was, what, $60 some a barrel at Union II?

Mr. CORCORAN. I believe that's the case. I was not involved in that decision, but I believe that's the case.

Senator NICKLES. Would you be kind enough, or would the Corporation be kind enough to go through each one of the projects and

give me their status? Give me, if there's a price guarantee, what that price guarantee is on a per-barrel basis or MCF basis?

I've got some things from the Corporation. I'm not satisfied with it. It has the last—it has some—whether or not there's a letter of intent signed, or so. But anyway, give me an update on the status, how much money is involved, private, public, guaranteed loans; if their price guarantee is what those price levels are on an energy equivalent that I can understand, on a barrel basis or MCF?

Mr. CORCORAN. Senator, you can be assured that we will do that. However, let me preface my commitment by saying that when you ask for the status of a project, you have to look at it from the standpoint of what the Board has done already.

And in the case of the letters of intent, we're dealing with eight projects that have a stated value of $6.8 billion and when you ask for an official request of the status, that's the information that you have to get back.

Senator NICKLES. I understand.

Mr. CORCORAN. In my judgment none of those projects are ready to go, and second, the final numbers involved will be greatly different from what the letters of intent would indicate.

Senator NICKLES. I hope that's the case.

Mr. CORCORAN. Because the review is taking place. We can see the results developing, and therefore an official status report would be an incomplete record of what's actually taking place at the Corporation.

Senator NICKLES. I understand that, but it would help bring my files up to date, because several of the things that we've discussed, even from the time that we were negotiating the rescission last year, have changed somewhat. And letting me know, yes, we're seriously considering these—some of these I think the private sponsors are walking away from. And you can let me know those, too.

You know, yes, they requested a letter of intent, or we signed a letter of intent; we're negotiating a contract and now it appears no longer feasible. Those types of facts.

And also this net cost of synthetic fuel assistance on a per-barrel basis, I argue with.

The CHAIRMAN. So that the record may show, let me indicate that you're referring to a project status from the Finance Group of the United States Synthetic Fuels Corporation, dated April 24, 1985, consisting of sheets which will be made a part of the record at this point.

[The information referred to follows:]

UNITED STATES SYNTHETIC FUELS CORPORATION

PROJECT STATUS

April 24, 1985

(IN MILLIONS)

RESOURCE PROJECTS	Preliminary Negotiated Agreement on Amount and Terms of Assistance	Signed Letter of Intent	Notification to Treasury to Set Aside Funds/Amount	Signed Contract	Private Sector Funds Invested To Date	Private Sector Funds Invested at Completion	Net Present Cost of SFC Assistance ($/bbl)
OIL SHALE							
Union Phase I Parachute, CO	N/A	N/A	N/A/$ 400	Yes	$ 683	$ 768	$ 1.10
Union Phase II Parachute, CO	Yes	Yes	Yes/$2,700	No	10	2,273	1.18
Seep Ridge Uintah Cty., UT	Yes	Yes	Yes/$ 45	No	4	14	2.59
Cathedral Bluffs Rio Blanco Cty., CO	Yes	Yes	Yes/$2,190	No	280(A)	586	2.37
COAL							
Dow Syngas Plequemine, LA	Yes	Yes	Yes/$ 620	Yes	2	105	3.57
Great Plains Beulah, ND	Yes	Yes	No /$ 820(B)	No	540	570	1.68
Cool Water Daggett, CA	Yes	Yes	Yes/$ 120	Yes	270	278	2.35
TAR SANDS/HEAVY OIL(C)							
Forest Hill	Yes	No	Yes/$ 60	No	16(D)	21	1.59
PEAT							
Northern Peat	Yes	Yes	Yes/$ 365	No	2	51	3.72
TOTAL			$7,320		$1,807	$4,666	

(A) Includes $50MM of expenditures by former partners

(B) Reflects new proposed assistance recently negotiated with sponsors. April 1984 letter of intent reflects $790 in price guarantees and funds for this amount have been set aside by Treasury.

(C) Two projects with letters of intent, Kentucky Tar Sand and Hop Kern have formally withdrawn their request for $543MM and $100MM assistance in March and April 1984 respectively.

(D) Includes $10MM funded by borrowing and existing operations

Finance Group
April 24, 1985

SFC LETTER OF INTENT PROJECTS

	Great Plains	Union Phase II	Cathedral Bluffs	Seep Ridge	Northern Peat	Forest Hill
Project Description						
Resource	North Dakota Lignite	Colorado Oil Shale	Colorado Oil Shale	Utah Oil Shale	Maine Peat	Texas Heavy Oil
Product	H8TU Gas	Hydo treated Shale Oil	Hydro treated Shale Oil	Raw Shale Oil	Peat Fuel	Heavy Crude
Plant Capacity - BOED	23,100	42,152	15,161	1,000	3,066	1,871
SFC Assistance - Terms						
Obligational Authority ($MM)	$820 b/	$2,700	$2,190	$45	$365	$60
Loan Guarantees	-	-	1,812	21	160	23
Initial Price Guarantees	820	2,700	378	24	205	37
Obligational Authority per BOED ($)	39,442	72,792	155,319	47,368	133,700	32,068
Initial Guarantee Price - $/BOE	$58	$67	$60	$42.50	$60.90	$40
Revenue/Profit Sharing above Thresholds (ATCF = After-tax Cash Flow)	90-75% ATCF	50-70% Revenues	10-70% ATCF	50-75% ATCF	80% ATCF	25-50% ATCF
SFC Outlays						
SFC Outlays ($MM)	$820	$2,700	$2,190	$45	$365	$60
SFC Receipts ($MM)	1,763	1,531	1,055	3	181	6
Net Outlays	$(943)	$1,169	$1,125	$42	$184	$54
PDV of Net Outlays ($MM) ($1984.4) a/	479	$638	487	25	98	33
PDV of Net Outlays Per Lifetime BOE a/	$2.38	$1.59	$3.15	$3.45	$4.95	$2.12
Private Investment						
Private Sector Funds at Completion ($MM)	$865	$2,273	$586	$14	$51	$21
Equity Investors (percent)	Tenneco (30) ANR (25) Transco (20) Midcon (15) Pacific Lighting (10)	Union	Tenneco (45) Occidental (45) Kiewit (10)	Kiewit (85) Geokinetics (15)	Signal	Greenwich

a/ Represents SFC outlays and receipts ($As-spent) deflated to fourth quarter 1984 dollars and discounted at 10% per year pursuant to the procedure set forth in OMB Circular No. A-94. Per barrel calculations based on total production over project life.
b/ Based on current understanding negotiated by SFC staff.

PROJECTS AWARDED FINANCIAL ASSISTANCE

PROJECT NAME AND LOCATION	SPONSOR(S)	TYPE OF PROJECT	PRODUCTION	ASSISTANCE
CALIFORNIA				
Cool Water Daggett, CA	Southern California Edison, Co.; Texaco, Inc.; Electric Power Research Institute, Inc.; Bechtel Power Corp.; General Electric Company; SCEERCO and JCWP, a Japanese consortium	Coal Gasification	4,300 BOED of synthetic gas to produce 111 (net) MW of electric power	Price Guarantee $120 million maximum.
COLORADO				
Union Oil Parachute Creek Phase I Parachute, CO	Union Oil Company of California	Oil Shale	10,400 BPD of hydrotreated shale oil	Price Guarantee $400 million maximum.
LOUISIANA				
Dow Syngas Near Plaquemine, LA	Dow Chemical Company	Coal Gasification	30 billion Btu's/ day of medium Btu gas (5,172 BOED)	Price Guarantee $620 million maximum

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PROJECTS UNDER CONSIDERATION IN THE THIRD SOLICITATION

PROJECT NAME AND LOCATION	SPONSOR(S)	TYPE OF PROJECT	PRODUCTION	TYPE OF ASSISTANCE REQUESTED
COLORADO				
Cathedral Bluffs Rio Blanco County, CO	Cathedral Bluffs Shale Oil Company (a partnership between Occidental Oil Shale, Inc., Tenneco Shale Oil Company and Peter Kiewit Sons, Inc.)	Oil Shale	14,300 BPD of shale oil (12,000 retorting and 2,300 MIS)	Letter of Intent signed for Loan and Price Guarantees in the maximum amount of $2.19 billion.
Union Oil Parachute Creek Shale Program, Phase II Parachute, CO	Union Oil Company of California	Oil Shale	42,152 BPD of hydrotreated shale oil in two 21,076 BPD increments	Letter of Intent signed for a Price Guarantee in the maximum amount of $2.7 billion.
MAINE				
Northern Peat Near Milford, ME	Signal Cleanfuels Corp.	Wet Carbonization of Peat	889 tons/day of peat-derived solid fuel (3,065 BOED)	Letter of Intent signed for Loan and Price Guarantees in the maximum amount of $365 million.
TEXAS				
Forest Hill Wood County, TX	Greenwich Oil Company	Heavy Oil	Average production of 1,592 BPD of 10 degree API crude oil (1,633 BOED)	Letter of Intent proposed for Loan and Price Guarantees in the maximum amount of $60 million.

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PROJECT NAME AND LOCATION	SPONSOR(S)	TYPE OF PROJECT	PRODUCTION	TYPE OF ASSISTANCE REQUESTED
UTAH				
Paraho-Ute Uintah County, UT	Paraho Development Corp., Texas Eastern Corp., Signal Cos., Inc., Raymond International and Utah International Corp.	Oil Shale	14,105 BPD of hydrotreated shale oil and 8 MW of electric power (14,436 BOED total)	Loan Guarantee and Price Guarantee
Seep Ridge Uintah County, UT	Geokinetics, Inc. and Gilbert Constructors, Inc., a subsidiary of Peter Kiewit Sons, Inc.	Oil Shale	1,000 BPD of shale oil	Letter of Intent signed for Loan and Price Guarantees in the maximum amount of $45 million.

PROJECT UNDER NEGOTIATION IN THE SOLICITATION FOR COAL OR LIGNITE GASIFICATION PROJECTS

PROJECT NAME AND LOCATION	SPONSOR	TYPE OF PROJECT	PRODUCTION	STATUS
Great Plains Coal Gasification Beulah, North Dakota	Great Plains Gasification Associates, a partnership comprised of Tenneco SNG Inc., ANR Gasification Properties Company, Transco Coal Gas Company, MCN Coal Gasification Company, and Pacific Synthetic Fuels Company	Lignite Gasification	137.5 million cubic feet/day of high Btu gas (23,000 BOED)	Letter of Intent signed for a Price Guarantee in the maximum amount of $790 million.

QUALIFIED PROJECTS UNDER CONSIDERATION IN THE SOLICITATION FOR COAL-WATER FUEL PROJECTS

PROJECT NAME AND LOCATION	SPONSOR(S)	PRODUCTION	TYPE OF ASSISTANCE REQUESTED
ALABAMA			
FW-Mobile(U) Mobile, AL	Foster Wheeler Corporation	15,350 BPD (COE)	Price Guarantee
FLORIDA			
Hillsborough Bay(U) Tampa, FL	COMCO of America, Inc., ARC-COAL, Inc., and Bechtel Power Corporation	18,000 BPD (COE)	Price Guarantee
Port Sutton(U) Tampa, FL	COMCO of America, Inc. and ARC-COAL, Inc.	4,125 BPD (COE)	Price Guarantee
GEORGIA			
FW-Savannah (U) Savannah, GA	Foster Wheeler Corporation	15,350 BPD (COE)	Price Guarantee

(U) = Electric utility power plant

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PROJECTS UNDER CONSIDERATION IN THE FOURTH GENERAL SOLICITATION

PROJECT NAME AND LOCATION	SPONSOR(S)	TYPE OF PROJECT	PRODUCTION	TYPE OF ASSISTANCE REQUESTED
INDIANA				
American Syn-Crude/ Indiana Oil Shale Southeastern, IN	American Syn-Crude Corporation, Stone & Webster Engineering Corp., and Petroleo Brasileiro, S.A.	Oil Shale	2,011 BOED of shale oil	Loan Guarantee and Price Guarantee
PENNSYLVANIA				
Keystone Somerset County, PA	The Signal Companies, Inc. (Kellogg Rust, Inc., Kellogg Rust Synfuels, Inc., KRW Energy Systems, Inc.) Energy Impact Associates, Inc., Johnstown Area Regional Industries	Coal Gasification	128 million SCF/day of fuel gas to produce 188 MW of electricity (6,600 BOED)	Loan Guarantee and Price Guarantee
UTAH				
Utah Methanol Wood Cross, UT	Questar Synfuels Corp., Intermountain Synfuel Corp., and CTN Fuels Co.	Coal Liquefaction (Indirect)	30,300 gallons/day of fuel grade methanol (330 BOED)	Loan Guarantee and Price Guarantee

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Senator ROCKEFELLER. Mr. Chairman, could I ask a question?

Senator NICKLES. I would hope that you would look at the—I'm almost finished, Jay. It says the net cost of assistance, per-barrel basis, and I think they're assuming that these things are going to run for 30 years and so forth, and I question that. Again, if you can give us that per-barrel cost, we know what the market price of energy is, and then it's very easy to tell what the differences are.

And that summation of these plants, and then I think that there's also been some additonal request of different types of projects, eastern coal projects and others, if you could give us maybe a little summary of those that—of applications or projects that have been submitted so we could look at those and see what type of other projects you're considering, that would be helpful as well.

And I'm not looking for reams of information. I'd like kind of a few pages, not a book.

Mr. CORCORAN. I understand your request, Senator.

Mr. REICHL. Senator, I'd just like to bring out that these per-barrel costs could be quite misleading. To give you an example, in the context of making power from coal by way of a high-pressure gasifier, the per-barrel cost of that gas that's transferred to the turbine would seem unreasonable.

You have to compare it with other ways of making the same electricity from the same coal. And in that context, it's quite attractive. But the per-barrel costs will seem unreasonable.

Senator NICKLES. I understand. But also, I understand when I look at some of these projects of 40,000 or 50,000 barrels per day, and I see the cost——

Mr. REICHL. There won't be any more of those, Senator.

Senator NICKLES. Well, I hope not, but those are the ones that really have concerned this Senator, because you're looking at $2 or $3 billion per project.

The CHAIRMAN. I think you would also have to recognize for the record at this point, as you scale them back to a smaller size, the per-barrel costs may go up.

Senator NICKLES. I understand that.

I might ask one further question, Mr. Chairman, and then I'll excuse myself. The legislation which was enacted in 1980 mandated production goals. Did we change that in the legislation last year?

The CHAIRMAN. Yes.

Senator NICKLES. Because we're mandating, what, a——

The CHAIRMAN. Production goals were dropped as a part of that compromise last fall.

Senator NICKLES. I was thinking that we did. I was hoping that we would.

Thank you very much.

The CHAIRMAN. I might state before Senator Nickles leaves, I understood him to make the comment, and I wanted, in his presence, to return to that comment, something about you understood Mr. Corcoran to be in line to assume the leadership of the Corporation.

I don't understand that Mr. Noble has resigned or has announced any intention to resign. I think it might be well for the record at this point to reflect——

Senator NICKLES. No. Did I say that?

The CHAIRMAN. That's what I understood you to say.

Senator NICKLES. No. I meant to say I compliment all of the panelists today for being a Director of the Syn Fuels Corporation. I might have said "the Director." Excuse me.

The CHAIRMAN. But I did want, if indeed I had heard it correctly, to at least have the record reflect what the current status is, and what our understanding is, because there's an awful lot of speculation out there, throughout the entire industry and across the country, as to what is the status of the present Board. I don't want to have that speculation fueled by any comments that might be made here.

Mr. Corcoran is Vice President of the Corporation. Is that correct?

Mr. CORCORAN. Vice Chairman.

The CHAIRMAN. Vice Chairman, excuse me, of the Corporation, in charge of external affairs.

Senator NICKLES. And all of our panelists will be Directors or members of the Board.

The CHAIRMAN. That is correct.

Senator NICKLES. Is it Directors or just Board members?

Dr. MACAVOY. Both.

Senator NICKLES. Thank you, Mr. Chairman.

The CHAIRMAN. Surely. Thank you, Senator Nickles.

I might just invite the Board to comment with respect to the charge of the Board under the statute, both originally, and as remains the charge under the compromise that was reached last year, to look at a variety of raw material feedstocks for a synthetic fuels program, to seek diversity of feedstocks, to achieve some diversity in technology and demonstration of diverse technologies, and to seek geographic diversity.

You've indicated that Great Plains might not get through the hoops today, but it's there as an operating plant. Does it also conform to that mandate that the Synthetic Fuels Corporation has? In other words, is it a useful part of the portfolio, even if scaled differently than you would now do?

Mr. CORCORAN. Mr. Chairman, I'm sure that my colleage, Mr. Reichl, will want to respond to that. He's much better informed on that particular subject than I am. But I think the answer is clearly yes.

We have made that particular project a part of our business plan that was adopted unanimously by the Board at an earlier Board meeting. We regard that as a key technology for the development of the capability in synthetic fuels for the critical resource of coal, and it's very much a part of our program.

The CHAIRMAN. Mr. Reichl.

Mr. REICHL. I could hardly add anything to that. I agree with it.

The CHAIRMAN. Did you have further questions?

Senator ROCKEFELLER. I have a statement I'd like to enter into the record if that's all right with the Chairman.

The CHAIRMAN. Surely. It will be made a part of the record in full.

[The prepared statement of Senator Rockefeller follows:]

PREPARED STATEMENT OF HON. JOHN D. ROCKEFELLER IV, A U.S. SENATOR FROM THE STATE OF WEST VIRGINIA

Mr. Chairman, today the Energy Committee considers three nominees to serve as Directors of the United States Synthetic Fuels Corporation. I welcome this as an opportunity not only to look at their qualifications but also to examine their attitudes toward management and promotion of synthetic fuels. Furthermore, since these nominees have been in an operating capacity at the Corporation as recess appointments, I also view this as an opportunity to focus on the plans these nominees have charted for operation of the corporation in the coming years.

Mr. Chairman, under the leadership of a Board of Directors appointed by this Administration, the Synthetic Fuels Corporation has traveled a rocky road in the last four years. Suffice it to say that I greet with a degree of healthy skepticism the nomination of the present nominees before us. I would further comment that given this Administration's relative indifference to synfuels development—and their outright hostility toward West Virginia coal—I think it only fair to ask these nominees if they are truly committeed to the development of synthetic fuels. I intend to assess the depth of their commitment to the existing legislative mandate on synthetic throughout the hearing process.

I think it is also important to evaluate these nominees within the context of the present policy and political climate on synthetic fuels. There are those in Congress, and elsewhere, who would continue to nail shut the coffin on synthetic fuels research as supported by the Synthetic Fuels Corporation. I have long believed, and continue to believe, that this would be a grave error for the long term energy future of the United States, and an error we would live to regret in our lifetimes. Taken together with the Reagan Administration's approach to energy emergency preparedness, hostility toward the continued filling of the Strategic Petroleum Reserve, drastic cuts in the coal and alternative fuels research budget, a continued failed commitment to synthetic fuels would amount to unilateral energy disarmament.

In sum, Mr. Chairman, I am looking for in these nominees a commitment to management excellence, a commitment to the development of a sound and reasonable technological base of synthetic fuels projects, a commitment to a balance of Eastern and Western Coal projects, and a commitment to the underlying legislative mandate of the Synthetic Fuels Corporation. I intend to listen intently to their testimony and presentation to the committee.

The CHAIRMAN. I think maybe a couple of things might well be explored before we depart from them while you are here. One of the questions that I think needs to be resolved, and a very difficult one, is the relationship between the Synthetic Fuels Corporation and the administration.

Obviously, the Synthetic Fuels Corporation statutorily is an independent governmental corporation. Obviously, the administration, the Executive Branch, has some influence over the Corporation by way of the recommendations that they make from time to time, and certainly by way of the selection of people to be nominated to act as Board members and officers of that Corporation to the extent of the statutory authority for nominations and appointments.

The question I have to ask is your view as to the role of the Secretary of the Department of Energy, the Secretary of the Department of the Treasury, and possibly OMB, as to whether they have direct supervisory authority over the actions of the Board.

Mr. Corcoran?

Mr. CORCORAN. Mr. Chairman, as you indicated, the Synthetic Fuels Corporation was expressly and, in my judgment, properly created as an independent entity of the Federal Government. And while through our Advisory Committee we are, under the provisions of law, required from time to time to seek the advice of the Advisory Committee which consists of the Secretaries of Energy, Interior, Defense, and Treasury, along with the Administrator of the Environmental Protection Agency, theirs is only in an advisory role.

In the case of Great Plains where we have a connection with a sister agency, the Department of Energy, we have asked—and I led that effort—for an independent analysis of the financial factors involved in the proposed assistance agreement.

However, it would be a mistake to conclude that that is a practice that would be applied to other projects.

Second, it would be a mistake to conclude that in any way we are asking for their concurrence. Quite the contrary. We believe that in order to exercise our fidicuiary responsibilities in this particular case, that it would be important to have the independent analysis because the matter does involve the Department of Energy. The default to which my colleague, Dr. MacAvoy, referred earlier is something that could have consequences for the Government as a whole. And so we're seeking the independent analysis and we will use that analysis as a part of our decisionmaking.

The CHAIRMAN. Mr. Reichl, any supplement to that?

Mr. REICHL. Hardly anything. I think on the positive side, there is complete coordination, I think, on the technical side between DOE and SFC programs. To give you a good example of it, we have in our programmatic plan a direct coal hydrogenation plant, if and when a project like this could be built.

But it's a fact that DOE's Research Program includes an awful lot of work in that area, and hopefully if it's successful, we might some day see such a project come our way. But there is good information both ways.

The CHAIRMAN. Dr. MacAvoy.

Dr. MACAVOY. As a director, Senator, I have tried to give productive thought to the question of the parallel with the private sector and determine who the stockholders are of this corporation. I feel in my work as—I know in my work as a director of private corporations, that I'm responsible to the stockholder, not only at the annual stockholders' meeting, but on a daily basis.

While my thought has not been penetrating, it has arrived at the point that the best analogy is that the stockholder in this instance is the Congress. They write the legislation and they change the legislation, and they play the most important role in doing what stockholders usually do, which is to provide the long-term capital.

That puts the administration in the position of being more like purchasers of services and providers of income. You can't run a corporation without them, but on the other hand you are ultimately responsible for the policy that makes the corporation operate in the best interests of the stockholders, which I believe in this instance consists of the members of the House and Senate as they vote.

The CHAIRMAN. I can't resist the compulsion——

Dr. MACAVOY. Don't try.

The CHAIRMAN [continuing]. That I feel right now to indicate that, first of all, I appreciate the statements that you've made about the relationship because we can't ignore the fact that the administration is there and that they have had an effect upon what Congress has done in writing the statute. I'd like your careful delineation that indeed the policy is set by the statute which was the joint product of congressional and executive actions, written in the Congress, after negotiation with the executive, and signed by the

President at the conclusion of that process. That is our operating document at the present time.

I also cannot resist now adding for the record that my own feeling is that we are buying knowledge, and it's hard to put value on knowledge. Just as we put a tremendous amount of money into the funding of education, we put an awful lot of money into basic research and development upon the collective judgment of many that indeed that expenditure is worth the gain that we hope to get.

And I believe we are buying knowledge in this instance. We're also paying for an insurance policy. It is not an annuity policy in which we're looking only for present cash value of that annuity policy. We're buying some insurance against accidents that may be more analogous to an accident or liability policy or a term life insurance policy.

The question is, what are paying for? And we ought to clearly understand what it is we are paying for and what we hope to get, because I think every one of you would recognize that the private sector is not going to make this investment in the time frame that we're talking about. That's why Congress created the Corporation, so that the investments would be made, that we would have that insurance policy, and that we would buy that knowledge in the time frame which we believe is essential to the future well-being of this country.

I don't believe any of us believed as we started on this that we would end up with the same kind of an investment decision that the private sector would make. Quite a different frame of reference for the expenditures made by this corporation. I believe all three of you understand and share that feeling; am I not correct?

Mr. CORCORAN. Yes, sir, Mr. Chairman.

The CHAIRMAN. Mr. MacAvoy.

Dr. MACAVOY. It holds for me, Senator.

[Mr. Reichl nods in the affirmative.]

Dr. MACAVOY. I would add that my statement attempted in the menial and low-brow way that economists have, to put some first estimates on values of knowledge in this area. I would never attempt to do that with secondary school education, but I attempted to do it in this instance, and it led me to the belief that the scaling of the program which you undertook last year brought benefits and costs into line to produce the maximum value program. It was too big earlier and now it's the right size, and it's possible to do a very great deal to increase productivity in the energy sector with this act.

The CHAIRMAN. I appreciate that comment. And again, that's even with the knowledge that reduction in scale may increase the per-barrel output.

Dr. MACAVOY. That is correct.

The CHAIRMAN. Our per unit of energy output.

Dr. MACAVOY. The per-barrel cost is misleading for the ultimate intent of the program.

The CHAIRMAN. We will submit some further questions for the record.

Mr. Reichl, do you have anything further you would like to add at this point before we conclude?

Mr. REICHL. Thank you, Senator. I have nothing.

The CHAIRMAN. Thank you very much.

Gentlemen, thank you very much for your testimony. I look forward to working with you.

[Subsequently the following questions were submitted to the nominees. The answers appear in appendix II.]

JAMES A. McCLURE, IDAHO, CHAIRMAN
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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510

May 6, 1985

The Honorable Thomas Corcoran
United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Dear Mr. Corcoran:

On behalf of the Committee on Energy and Natural Resources, I wish to express its appreciation for your testimony on your nomination to be Member of the Board of Directors of the Synthetic Fuels Corporation.

Please find enclosed copies of questions submitted to you for response by various members of the Committee. We certainly appreciate your willingness to respond to the enclosed questions in a timely fashion. Please have all responses to us by noon, Monday, May 13, 1985, and supply the Committee with 40 copies of same. Your responses, and any inquiries regarding this request, should be directed to the attention of Richard Grundy, Senior Professional Staff Member, at 224-2564.

Sincerely,

James A. McClure
Chairman

Enclosures

QUESTIONS

HEARING ON THE NOMINATIONS OF
THOMAS CORCORAN, ERIC REICHL, AND PAUL WEBSTER MacAVOY
TO BE MEMBERS OF THE BOARD OF DIRECTORS
UNITED STATES SYNTHETIC FUELS CORPORATION

May 3, 1985

Questions for Each Nominee

Submitted by Senator Warner

1. Last year when Chairman Noble appeared before this Committee he assured us that 1984 was going to be the year of coal. Now it's 1985, and I want to know whatever happened to the year of coal.

2. I have expressed to you and other members of the Board my very strong interest in the Synthetic Fuels Corporation's supporting coal-water projects. I stand by that support. What is the status of the Corporation's Coal Water Solicitation and what is your view of it?

3. I commend you for the development of your Phase I Business Plan which specifies the kinds of projects you intend to fund. Where are you going to get the projects? In other words, are you convinced the private sector is interested in the same kinds of projects you have identified as important national priorities?

4. I am also concerned that there are certain other very promising technologies in which the private sector has an interest and is seeking SFC support, but the SFC does not appear inclined to support. I am thinking specifically again of coal water fuels and also low BTU gas.

I am told that the state of the art for Low BTU gas is at a critical threshold needing only a few short years of federal support to move it into the marketplace in late 1980's for

dimension of financial support is small in comparison to both new "greenfield" medium BTU gas project costs and the benefits to be derived by utility customers. I am concerned that in this period of a temporary glut of crude oil, that Low BTU coal gasification as an option for the utility industry could be significantly delayed because of the SFC decision to exclude this technology when we know a market will exist and for which we likewise know there are precious few options available. I urge the SFC to reconsider in their business plan a Low BTU gas option because I believe we must not ignore a significant coal utilization technology that can benefit electric ratepayers while at the same time contribute materially to the cleaner burning of coal. Will you reconsider the possibility of supporting Low BTU gas projects?

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Questions from Senator Johnston

Questions for Each Nominee

5. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable.

However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content will play in the SFC's program.

I would appreciate your comments.

6. A Vice President of Illinois Power Company, Mr. Womeldorff, has submitted testimony for the hearing which, while it supports the SFC program and your nomination, poses a question that I believe warrants an answer.

Mr. Womeldorff states that he is "very disappointed that the SFC Board of Directors, including those members before this Committee today, has not recognized that technologies which Illinois Power and many other utilities feel are most practical for utility use, close to commercial application and more

adaptable to some coal burning utility systems are worthy of consideration by the SFC. In the newly announced business plan and in the draft comprehensive strategy, I was unable to find any indication that the SFC has expressed any interest in considering low BTU gasification systems. It is these systems which offer the quickest and most satisfactory means, from our point of view, of bringing high sulfur coal back into the national energy picture in an environmentally acceptable way."

He goes on to point out that utilities from Maryland to Oklahoma have financially supported development of low BTU gasification. If Mr. Womeldorff is right about your position on low BTU gasification, why have you rejected his argument?

Questions for Mr. Corcoran

Submitted by Senator McClure

7. At the last Board meeting, you suggested that before you could vote on Great Plains you would require concurrance from the Secretary of Energy and the Secretary of the Treasury, and possibly OMB.

   a. Would you explain your position?

   b. Do you consider OMB concurrance is required for Board action on Great Plains or any other project?

   c. The Energy Security Act established an advisory committee for SFC consultation with the Executive Branch. Why did you advocate direct correspondence with Department of the Treasury and OMB, rather than use of such advisory committee?

   d. Does this indicate that the SFC will pursue a policy of seeking prior Administration clearance before acting on applications for financial assistance?

Question (for the Record) for Tom Corcoran
Synthethic Fuels Corporation
Confirmation Hearing on May 3, 1985

From Senator Pete Domenici

8. As you have noted in your testimony, one of the most promising markets that exists today and will exist in the near future is the utility market. Utilties need cleaner coal burning systems to meet expected load growth in the 1990's. Those same systems find equally attractive use in many industrial applications.

To its credit the SFC, in its most recent Board meeting, asked for comments on a draft solicitation for three coal gasification systems intended primarily for use on utility systems. This is a move that I support and encourage the SFC to proceed as rapidly as possible to finalize that solicitation.

However, I would point out that I am surprised and disappointed that the SFC has not addressed itself to another coal based synthetic fuel resource that is as promising as those addressed in the draft solicitation. That is the production and combustion of low BTU gas from coal. It is my understanding utilities see significant economic, technical and environmental advantages in low BTU gas systems. They have invested large sums of monies to bring these technologies to a point where they can, and should, be demonstrated to be suitable for use on utility and industrial systems. Until now, the SFC has ignored the attractiveness of these technologies in the marketplace. I believe that this is a mistake.

Could you comment? Do you foresee a solicitaton for low-BTU technologies for industrial applications?

Questions for Mr. Corcoran

Submitted by Senator Johnston

9. The Phase I Business Plan describes Coal-Water Slurries as being a technology upon which the Board "is still considering how best to proceed". The plan says there are significant and unique market obstacles to the commercial application of coal-water fuel technology in utilities and the Corporation is said to be looking for "appropriate innovative ways to use its authorities here. What is the problem here? Is it a technical problem, a market problem or what?

10. The Phase I Business Plan says that the Corporation will give some preference within the coal program to projects that include production of liquid fuels, but the plan also says that the emphasis will be on assuring that satisfactory technology is in hand to gasify under pressure, leaving it to the market to decide the type of product produced.

11. Are you saying that all other things being equal, if two projects use the same gasification process but one converts the gas to liquids, that you will fund the one producing liquids? Are you sure that will be enough incentive to assure that the liquid products technology will be satisfactorily developed?

12. How do you go about determining what is the smallest plant that is commercial scale for a given technology?

Questions on behalf of Senator Hatch

Issue: Role of SFC and Need to Increase Support for Projects Given Current Oil Prices

13. The Energy Security Act specifically recognizes that government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past three years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

14. I would assume that declining oil prices have effected the level of supports necessary for any or all of the projects with existing letters of intent in order for them to remain viable. How is the Corporation addressing this issue?

    a. Will these projects be economically unviable if no adjustments are made?

    b. Did the need for upward adjustment factor into the Board's decision to defer action on the Seep Ridge Oil Shale Project for three months?

    c. Did your staff find these increased costs justified given current market conditions?

Issue: Production Goals of Corporation

15. The Energy Security Act established a goal of achieving a synthetic fuel production capability equivalent to at least 500,000 barrels per day (crude oil) by 1987 and 2,000,000 barrels a day by 1992 from domestic resources. Obviously a series of events have stymied this progress.

    a. What are your production goals for 1987 given today's current situation?

    b. How soon do you intend to fund projects in order to meet these goals?

    c. Will you fund projects individually, or act on them collectively?

Issue: Project Status in Terms of Necessary Assistance from the Corporation

16. Section 8731 of the Energy Security Act indicates that preference shall be given to those proposals which represent the least commitment of financial assistance from the Corporation.

    a. Using current data and projections, which of the projects with letters of intent requires the lowest financial commitment from the Corporation?

    b. Which project has the lowest estimated cost per barrel?

    c. Could you rank the projects with letters of intent in terms of necessary assistance and per barrel costs?

Issue: SFC Involvement with the Defense Department

17. The Energy Security Act recognizes the production of synthetic fuels has a national defense application and indicates that the Corporation should expedite its initial development.

    a. What has the Corporation done in this area?

    b. Is it correct that the Air Force has tested and responded favorably to jet fuel produced for oil shale?

Issue: Commitment to Goals of the Corporation

18. Do you agree with the goals of the Energy Security Act?

    a. Are there any changes to that act that you would like to see?

    b. Do you believe that projects in coal, tar sands, shale and heavy oil should be included in the SFC program?

    c. Do you believe any particular area is more deserving than another? If so which?

    d. Would you exclude any of these areas from funding?

Issue: SFC's Intent to Fund Diversity of Projects Anticipated Time Frame for Funding

19. Under the definitions of the Energy Security Act, the term Synthetic Fuel is described as any solid liquid or gas or combination which can be used as a substitute for Petroleum or Natural Gas, but are specifically listed as: coal, shale, tar sands, and heavy oils. Does the Corporation intend to fund projects in each of these categories?

    a. When do you anticipate the Board will take positive action in actually funding a project? Can we expect action in the next three months? Six months? Year?

    b. Do you anticipate that projects will be funded individually or in packages? (Oil Shale Projects, Tar Sands Projects, etc.)

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United States Senate
COMMITTEE ON
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WASHINGTON, DC 20510

May 6, 1985

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Questions for Mr. MacAvoy

Submitted by Senator Johnston

On page 4 of your statement you say that, "In any event, given the experience in reactor development, it is more appropriate that the full scale plant be undertaken by the first commercial enterprise. Following the Business Plan closely and cutting back to projects one- third the size previously envisioned would result in SFC outlays less than half of the amount authorized."

7. Does the Business Plan itself call for cutting back to projects one-third as large or are you simply advocating that projects be one-third as large as originally envisioned? (The plan seems to call for projects affording "commercial scale experience".)

8. Shouldn't the size of the project be dictated by the specific plant size necessary to achieve commercial experience with a particular technology?

Questions on behalf of Senator Hatch

Issue: Role of SFC and Need to Increase Support for Projects Given Current Oil Prices

9. The Energy Security Act specifically recognizes that government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past three years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

10. I would assume that declining oil prices have effected the level of supports necessary for any or all of the projects with existing letters of intent in order for them to remain viable. How is the Corporation addressing this issue?

    a. Will these projects be economically unviable if no adjustments are made?

    b. Did the need for upward adjustment factor into the Board's decision to defer action on the Seep Ridge Oil Shale Project for three months?

    c. Did your staff find these increased costs justified given current market conditions?

Issue: Production Goals of Corporation

11. The Energy Security Act established a goal of achieving a synthetic fuel production capability equivalent to at least 500,000 barrels per day (crude oil) by 1987 and 2,000,000 barrels a day by 1992 from domestic resources. Obviously a series of events have stymied this progress.

    a. What are your production goals for 1987 given today's current situation?

    b. How soon do you intend to fund projects in order to meet these goals?

    c. Will you fund projects individually, or act on them collectively?

Issue: Project Status in Terms of Necessary Assistance from the Corporation

12. Section 8731 of the Energy Security Act indicates that preference shall be given to those proposals which represent the least commitment of financial assistance from the Corporation.

    a. Using current data and projections, which of the projects with letters of intent requires the lowest financial commitment from the Corporation?

    b. Which project has the lowest estimated cost per barrel?

    c. Could you rank the projects with letters of intent in terms of necessary assistance and per barrel costs?

Issue: SFC Involvement with the Defense Department

13. The Energy Security Act recognizes the production of synthetic fuels has a national defense application and indicates that the Corporation should expedite its initial development.

    a. What has the Corporation done in this area?

    b. Is it correct that the Air Force has tested and responded favorably to jet fuel produced for oil shale?

Issue: Commitment to Goals of the Corporation

14. Do you agree with the goals of the Energy Security Act?

    a. Are there any changes to that act that you would like to see?

    b. Do you believe that projects in coal, tar sands, shale and heavy oil should be included in the SFC program?

    c. Do you believe any particular area is more deserving than another? If so which?

    d. Would you exclude any of these areas from funding?

Issue: SFC's Intent to Fund Diversity of Projects Anticipated Time Frame for Funding

15. Under the definitions of the Energy Security Act, the term Synthetic Fuel is described as any solid liquid or gas or combination which can be used as a substitute for Petroleum or Natural Gas, but are specifically listed as: coal, shale, tar sands, and heavy oils. Does the Corporation intend to fund projects in each of these categories?

    a. When do you anticipate the Board will take positive action in actually funding a project? Can we expect action in the next three months? Six months? Year?

    b. Do you anticipate that projects will be funded individually or in packages? (Oil Shale Projects, Tar Sands Projects, etc.)

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D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510

May 6, 1985

Mr. Eric Reichl
United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Dear Mr. Reichl:

On behalf of the Committee on Energy and Natural Resources, I wish to express its appreciation for your testimony on your nomination to be Member of the Board of Directors of the Synthetic Fuels Corporation.

Please find enclosed copies of questions submitted to you for response by various members of the Committee. We certainly appreciate your willingness to respond to the enclosed questions in a timely fashion. Please have all responses to us by noon, Monday, May 13, 1985, and supply the Committee with 40 copies of same. Your responses, and any inquiries regarding this request, should be directed to the attention of Richard Grundy, Senior Professional Staff Member, at 224-2564.

Sincerely,

Jim McClure

James A. McClure
Chairman

Enclosures

QUESTIONS

HEARING ON THE NOMINATIONS OF
THOMAS CORCORAN, ERIC REICHL, AND PAUL WEBSTER MacAVOY
TO BE MEMBERS OF THE BOARD OF DIRECTORS
UNITED STATES SYNTHETIC FUELS CORPORATION

May 3, 1985

Questions for Each Nominee

Submitted by Senator Warner

1. Last year when Chairman Noble appeared before this Committee he assured us that 1984 was going to be the year of coal. Now it's 1985, and I want to know whatever happened to the year of coal.

2. I have expressed to you and other members of the Board my very strong interest in the Synthetic Fuels Corporation's supporting coal-water projects. I stand by that support. What is the status of the Corporation's Coal Water Solicitation and what is your view of it?

3. I commend you for the development of your Phase I Business Plan which specifies the kinds of projects you intend to fund. Where are you going to get the projects? In other words, are you convinced the private sector is interested in the same kinds of projects you have identified as important national priorities?

4. I am also concerned that there are certain other very promising technologies in which the private sector has an interest and is seeking SFC support, but the SFC does not appear inclined to support. I am thinking specifically again of coal water fuels and also low BTU gas.

I am told that the state of the art for Low BTU gas is at a critical threshold needing only a few short years of federal support to move it into the marketplace in late 1980's for

dimension of financial support is small in comparison to both new "greenfield" medium BTU gas project costs and the benefits to be derived by utility customers. I am concerned that in this period of a temporary glut of crude oil, that Low BTU coal gasification as an option for the utility industry could be significantly delayed because of the SFC decision to exclude this technology when we know a market will exist and for which we likewise know there are precious few options available. I urge the SFC to reconsider in their business plan a Low BTU gas option because I believe we must not ignore a significant coal utilization technology that can benefit electric ratepayers while at the same time contribute materially to the cleaner burning of coal. Will you reconsider the possibility of supporting Low BTU gas projects?

Questions from Senator Johnston

Questions for Each Nominee

5. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable.

However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content will play in the SFC's program.

I would appreciate your comments.

6. A Vice President of Illinois Power Company, Mr. Womeldorff, has submitted testimony for the hearing which, while it supports the SFC program and your nomination, poses a question that I believe warrants an answer.

Mr. Womeldorff states that he is "very disappointed that the SFC Board of Directors, including those members before this Committee today, has not recognized that technologies which Illinois Power and many other utilities feel are most practical for utility use, close to commercial application and more

adaptable to some coal burning utility systems are worthy of consideration by the SFC. In the newly announced business plan and in the draft comprehensive strategy, I was unable to find any indication that the SFC has expressed any interest in considering low BTU gasification systems. It is these systems which offer the quickest and most satisfactory means, from our point of view, of bringing high sulfur coal back into the national energy picture in an environmentally acceptable way."

He goes on to point out that utilities from Maryland to Oklahoma have financially supported development of low BTU gasification. If Mr. Womeldorff is right about your position on low BTU gasification, why have you rejected his argument?

Questions on behalf of Senator Hatch

Issue: Role of SFC and Need to Increase Support for Projects Given Current Oil Prices

7. The Energy Security Act specifically recognizes that government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past three years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

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    b. Do you anticipate that projects will be funded individually or in packages? (Oil Shale Projects, Tar Sands Projects, etc.)

The CHAIRMAN. We have three more witnesses, Mr. Michael S. Koleda, the president, National Council on Synthetic Fuels Production; Porter J. Womeldorff, vice president, Illinois Power Co.; and Jim Matheson, director, Synthetic Fuels Project, Environmental Policy Institute.

I wonder if you three gentlemen would come forward and take seats at the witness table, please.

Mr. Koleda, your entire statement will be placed in the record. You may summarize or deliver the statement as you will see fit.

STATEMENT OF MICHAEL S. KOLEDA, PRESIDENT, NATIONAL COUNCIL ON SYNTHETIC FUELS PRODUCTION

Mr. KOLEDA. Thank you, Mr. Chairman, for the opportunity to testify on this important occasion.

Your closing statement came so close to the views that the industry would have on this matter that I'm really tempted—and I know there would be great applause if I were to do so—to simply ask you if you have any questions of me. But let me make just a couple of comments.

The CHAIRMAN. Surely.

Mr. KOLEDA. We've had 5 years of frustration in this program and you're well aware of that. It's been as frustrating for you as it has been for industry. Our calculations are that the synthetic fuels industry has spent approximately $5 billion in research and development and capital expenditures in this period. There has not been enough action at the SFC in our view. That must change.

Private sponsors are, to some extent, walking away from projects. And it's not really surprising. The market pressure isn't pushing industry to build synfuels projects, and there doesn't seem to be much happening so far at the SFC. We hope that will change.

I want to underscore just a couple of quick facts for the record. Oil reserves are going down in this country. They've declined 17 percent from 1977 to 1983. In 1983, we produced 3 billion barrels of oil, but we found only 900 million, about a little less than a third of what we produced.

Second, large energy companies are pulling back from taking big risks, not only in areas like synfuels where they don't understand the risks, but in traditional areas like drilling. Arco was mentioned a little earlier in terms of restructuring. The restructuring that Arco is doing and a number of other oil companies are doing at this time is driven by concern about stock values in the short run, not about long-term risky ventures, and that needs to be kept in mind. That's the second major fact.

Third, there's a substantial national stake in an orderly transfer in this country from oil to solids fuels. That transfer has got to take place; it's got to take place in an orderly fashion and in an environmentally acceptable fashion. That's a problem for this country.

The fourth point that I want to make is that the energy industry is jealous of keeping the Federal Government out of its business to the extent that it can. That's a reality that we always have to keep in mind.

Fifth, the market alone approach simply means increased reliance on imported oil, increasingly from the Persian Gulf. So if we're going to do something about that, we're going to have to find a way to make an orderly, environmentally acceptable transition to solids. It's a very big job. We're using public money to alter the private market's behavior.

There was quite a bit of concern expressed here today about the possibility that we might be doing things that the market wouldn't approve of. I think we ought to face straight up to the fact that we're doing exactly something that the market doesn't approve of. We're pushing synfuels technologies ahead faster than the market will do them. We're doing it deliberately; we're using Federal money; we're subsidizing; and we're doing it in the national interest.

That's what this Government is all about in our country, and we should't be too shy about recognizing it, I believe.

Now, it's a big task because we're going to be using Federal money to encourage the development of synthetic fuels in an industry that is very jealous of keeping the Government out of its business. It's going to be a sensitive task; it's going to take courage, and it's going to take basic commitment to the purposes.

It's not the kind of thing we can back into. We cannot have a Board of Directors that is concerned that it might be stepping on the toes of the market. Those Board nominees must recognize that there's an energy challenge facing America that needs to be addressed through syn hetic fuels development in the national interest and accept that they are confirmed for the purpose of doing something about it, with your help and with our help.

Thank you very much.

[The prepared statement of Mr. Koleda follows:]

TESTIMONY

OF

MICHAEL S. KOLEDA

Mr. Chairman, thank you for the opportunity to share my views with the Committee today as you consider the nominations of Mr. Corcoran, Mr. MacAvoy and Mr. Reichl to be directors of the U.S. Synthetic Fuels Corporation.

The SFC was created almost five years ago and charged with a difficult, vital task -- to provide this Nation with the capability to produce on a commercial scale, and in an environmentally acceptable manner, synthetic fuels from solid fossil resources as a replacement for imported petroleum.

Regarding the Nation's progress during that five years, I will be brief and to the point. The U.S. synfuels program is in trouble today.

The current energy and economic climate prevents the private sector from pursuing its plans of a few years ago to build first generation commercial scale plants without public sector assistance.

But, for a number of reasons, the U.S. Synthetic Fuels Corporation has not been forthcoming with the necessary financial assistance that it was created by the Congress to provide.

And there are now powerful and persuasive forces calling upon the Congress and the Executive to abandon efforts to develop the Nation's synfuels option.

My purpose in testifying today is not to engage in finger-pointing or blame-placing. I simply wish to lay out the clear and compelling reality of the current U.S. energy situation. I hope this will serve as a reference point for the directors of the SFC as they ponder how best to discharge their responsibilities, and as an illustration to synfuels critics of why we must proceed with this program.

The U.S. today faces a serious problem of national proportions -- we are using more petroleum than we are finding. And we are doing it on a monumental scale.

In 1983 the U.S. produced some 3.02 billion barrels of oil. That's good news because it is oil we did not have to import.

The bad news is that new discoveries added only 924 million barrels of oil -- less than one third of production -- to reserves.

The trend in declining oil reserves is chronic and irreversible. Petroleum geologists in industry and government agree on this point. It cannot be ignored with the hope that it will go away. The U.S. reserves-to-production ratio has declined from 11.1 to 1 in 1977 to 9.18 to 1 in 1983 -- a drop of over 17% during a six year period that saw U.S. exploratory drilling hit historical peaks due to dramatic rises in oil prices.

Two fundamental reasons explain the decline of oil reserves in the U.S. With each succeeding year we have less undiscovered oil in the ground and American industry is spending less money trying to find what's left.

The U.S. is the most thoroughly explored oil region in the world, but the days of large oil discoveries in this country are past us. Over 95 million feet of exploration drilling was carried out in the U.S. lower 48 states in 1982, compared to about 40 million feet for the entire rest of the western world. Despite this level of exploratory drilling we are finding oil in decreasingly smaller amounts. During 1982 in the U.S. for every foot of exploratory drilling we found thirteen barrels of oil. During the same year in the Persian Gulf each foot of drilling turned up 4,500 barrels of oil.

Second, the U.S. oil industry is spending less on oil exploration. The Oil and Gas Journal reports that domestic drilling spending will total $24.6 billion in 1985, 38% below the 1982 peak of $39.4 billion.

The trend in declining exploratory spending is expected to continue due to expectations of lower future oil prices and the threat of hostile takeovers now looming before many of the major U.S. oil companies.

The case of Atlantic Richfield Co. is illustrative. In a restructuring announced this week following threatening gestures from "Pickens Rangers", Arco announced that it will cut back drastically on exploration expenditures and intensify efforts to develop or obtain already-discovered oil and gas reserves. While this move makes good sense for Arco and its shareholders, it will do nothing to stem the steady decline in U.S. oil reserves.

Arco is not unique among major oil companies. Because of pressures to increase the value of oil company stocks, the oil industry is becoming more risk-averse -- a fact portending ill both for synfuels and for conventional oil and gas exploration. If the oil industry is retrenching on what it knows best -- boring holes in the earth searching for oil and gas -- what is the likelihood for investments in even more risky synfuels technologies?

It is clear that the twin trends of declining U.S. oil reserves and decreasing risk exposure by the energy industry brought on by shareholder pressures will lead in but one direction -- increasing U.S. oil imports and the potential for a replay of the energy blackmail of the 1970's, perhaps within the next decade.

Secretary of the Interior Hodel noted in a speech last month that unless the U.S. finds 32 billion new barrels of oil reserves in the next decade, oil imports could rise to 50% of our needs by the end of the 1990's. Mr. Chairman, I submit that we will not find that oil, and that the Nation must get about the business of developing our other domestic energy resources to replace declining oil reserves.

Mr. Chairman, I repeat these basic truths -- which have been brought up time and again -- because they have a way of receding in the face of apathy and political rhetoric. I repeat them to put on notice those who seek to untrack the U.S. synfuels program that they cannot shirk the responsibility to an electorate that will be asking why we did not aggressively pursue the synfuels option when time and circumstance gave us the opportunity.

The development of a commercial synthetic fuels production capability in the U.S. offers the nation the opportunity to unlock its solid fossil fuel reserves to replace our declining petroleum reserves. And it offers the added benefit of using our solid fossil fuels -- especially coal -- in an environmentally responsible manner.

Mr. Chairman, I realize many in the environmental community oppose the SFC program, but I am at a loss to explain why. As an example, the Coolwater project in California, has demonstrated a new technology available to U.S. utilities that will permit expanded coal use with vastly improved environmental performance over existing plants or even those with advanced scrubbers. Yet, the Coolwater plant would not have gotten underway without an SFC price guarantee.

America needs to build several more pioneer commercial scale synthetic fuels projects -- projects demonstrating a full range of technologies for coal, oil shale, tar sands, and heavy oil. The more technology-resource combinations that we can demonstrate at commercial scale in the next decade, the greater likelihood that synfuels will be replacing significant amounts of imported oil early next century.

If the U. S. does not push ahead aggressively with synthetic fuels, we also run the risk of forfeiting our leadership position in technological competition with the rest of the world. Many countries are, in fact, moving forward with synthetic fuels. West Germany and Japan, for instance, are preparing to build direct coal liquefaction projects. Australia and the Soviet Union are making progress in both coal and oil shale. Canada, of course, is developing its vast tar sands resources. And Britain and France want to move forward with synfuels, too.

Critics in the Congress ask, "Can the U. S. government afford to move ahead with a synthetic fuels program during a time of fiscal austerity?" I think the answer is that we can't afford not to.

Our national synthetic fuels program envisions the federal government's spending about $8 billion over the next 15 years to subsidize pioneer projects through price guarantees. We're talking about an average of $500 million per year, or about five ten-thousandths of the current federal budget.

Last year alone the U.S. spent almost $60 billion on imported petroleum, and that figure is going only one way -- up!

Frankly, I don't think that $8 billion spent over 15 years is too dear a tariff to develop the vast solid fossil fuel reserves now locked up because we lack the commercial technologies to tap them.

It is true that oil prices are down and the federal deficit is up, but it would be a bad mistake to put synthetic fuels development on hold. Congress acted wisely and boldly five years ago when it established a federal program to accelerate the synfuels timetable. We as a nation must not retreat from our commitment to synthetic fuels.

Mr. Chairman, you may fairly ask me what is required of the nominees for SFC director appearing before your committee today? I refer them to the Energy Security Act which recognizes the need, and directs the Corporation's board, to assure the nation of an environmentally acceptable synfuels production capability to augment our declining domestic petroleum reserves. Projects assisted by the Corporation must demonstrate critical equipment and processes at a commercial scale. A return to more research and development is no substitute.

It is my hope that the SFC Director nominees are as dedicated to this proposition today as were the framers of the Energy Security Act in 1980.

The CHAIRMAN. Thank you.
Mr. Womeldorff.

STATEMENT OF PORTER J. WOMELDORFF, VICE PRESIDENT, ILLINOIS POWER CO.

Mr. WOMELDORFF. Thank you, Mr. Chairman.

You have, I think, a copy of my statement, and I presume it will be entered in the record.

The CHAIRMAN. It will be placed in the record in full.

Mr. WOMELDORFF. In summary, that statement supports the qualifications of the nominees of the Board of the Synthetic Fuels Corporation, and generally supports the business plan of the Corporation.

Moreover, it states and emphasizes my belief that the Congress did the right thing in creating the SFC. It continues to be the means for an effective Government/private sector partnership seeking to overcome economic and regulatory barriers to building first of a kind commercial plants advancing the Nation's synthetic fuel industry.

There is no question in mind that the basic structure of the act and the authorities and the general objectives of the act are still applicable and valuable. The only difference from 5 years ago is that they are applicable to a somewhat different market, and that market needs immediate attention by the Congress and the SFC.

As an officer of an utility, I am encouraged that the discussion today has recognized the importance of the market in the utility sector as potentially an early commercial arena in which synfuel production and use will occur.

If Senator Nickles were here, I'd add probably "without long-range subsidy," in my belief.

The draft solicitation which the Board is considering further addresses this recognition. The thrust of my testimony and concern is that while the SFC has been characterized as fostering Government/private sector cooperation, a large regional sector of the private utility industry is apparently barred from an opportunity to participate in this cooperative effort by an apparent narrowing of the definition of synthetic fuels as originally defined by the Energy Security Act.

If gaseous fuels derived from coal are arbitrarily defined as those processed at high pressure and using oxygen, then the needs of utilities in much of the eastern and the Midwestern United States are ignored. They need a synthetic fuel that can be used in electric production, that follows the widely changing needs of their systems on a daily basis, and uses locally available high-sulfur coal; thus, they have been and are supporting the development of low, not medium, Btu gas; that is, a process that does not use oxygen, but instead uses air as a reactant.

They do this in the belief that this may be the only synthetic fuel which will respond to their system needs. The specific reason for these beliefs are detailed in my statement.

Therefore, I would urge that the business plan of the Synthetic Fuels Corporation clearly encompass the full breadth of the Energy Security Act and permit full consideration and evaluation of all

projects which will further the purposes of that act and the charter of the SFC.

[The prepared statement of Mr. Womeldorff follows:]

STATEMENT BY

PORTER J. WOMELDORFF

BEFORE

U.S. SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

MAY 3, 1985

Mr. Chairman and members of the Committee. I want to thank you for the opportunity to testify at this hearing. While I have no reason to question the qualification of any of the three nominees to be a member of the Board of Directors of the U.S. Synthetic Fuels Corporation, I would like to discuss briefly an issue which should be important to members of this Committee and to these nominees as they contemplate their role in guiding the SFC.

By way of introduction, I am Vice President of Illinois Power Company, an investor owned electric utility with its headquarters in Decatur, Illinois. Among my responsibilities are the management of our system planning and research activities. Our service area covers one quarter of the State of Illinois and we serve a total of 533,000 customers. The total generating capability of our system is 3727 MW. Over 98% of the electricity we provide to our customers is generated from coal.

At the national level, I serve as the Chairman of the EPRI Advanced Fossil Power System Task Force which has responsibility for coal gasification programs which EPRI supports. At the regional level, I am Chairman of the Steering Committee for the KILnGAS coal gasification project. The KILnGAS steering committee is comprised of representatives from 12 electric utilities, the Electric Power Research Institute and the State of Illinois. All have contributed to the construction and operation of the KILnGAS project in East Alton, Illinois. I am also past chairman of the KILnGAS Technical Committee. At the state level, I am an appointed member of the Illinois State Coal Research Board, Chairman of the Industry Advisory Committee of the Center for Research on Sulfur in Coal which is a consortia of Argonne National Laboratory and five agencies and universities with activities devoted to research on removing sulfur from coal and Chairman of the University of Illinois College of Engineering Research Advisory Board. In these various capacities, I have been a part of coal related developments for some 10 years.

Mr. Chairman, there is no doubt in my mind that the U.S. Synthetic Fuels Corporation now faces one of the most promising opportunities in the nearly five years of its existence. I am aware that it has been extraordinarily difficult for the SFC to achieve the goals of the Energy Security Act given the

very rapid deterioration that has taken place in the market for synthetic fuels from shale, tar sands, heavy oil, etc. These market changes were clearly unforseeable by the Congress when the Energy Security Act was passed. They have caused many in the Congress and in the private sector to think again as to whether the SFC has a role in the current marketplace. This discussion in my view is healthy and necessary.

What I would like to state and emphasize is that the Congress did the right thing in creating the SFC. It continues to be a potentially effective means of creating a government-private sector partnership which is seeking to overcome economic and regulatory barriers to building first of a kind commercial plants while advancing national priorities.

There is no question in my mind that the basic structure of the Act and the authorities and general objectives of the Act are still applicable and valuable. The only difference from five years ago is that they are applicable to a somewhat different market and that market needs immediate attention by the Congress and the SFC.

That market is the utility market for gaseous synthetic fuel products from coal. Coal is still our most abundant domestic energy resource. It is a vastly underutilized resource. Coal is underutilized simply because existing combustion processes produce pollutants which are difficult to manage with existing technologies. The future for increased coal use is in new technologies which remove pollutants prior to or during combustion when they are easier to capture and easier to manage, allowing for greater overall efficiency in operating the system. Coal has a bright future, but only if these technologies can be the basis on which coal is burned in utility and industrial systems.

My company is a coal based utility. We burn coal now. We want to continue burning coal in the future. Our service area includes many coal mines in which our customers work, have worked and want to continue working or, more importantly, want to return to work. Our service area is dependent on the economic benefits that come from using locally available coal. At this point in time, I have to tell you that not much is seen on the horizon to bring the coal industry back to life -- except for the prospect that utility and industrial coal users will be able to burn coal cleanly and efficiently.

It is this prospect which gives the SFC a new mission and a new life. Coal can be used cleanly. The technological background work has been done. What is important now is to support large scale demonstration of technologies. It must be done on a utility scale and over a time period that is sufficient to convince the marketplace that these technologies are capable of sustained and reliable operation on a utility or industrial system.

To its credit, the SFC in its most recent Board meeting approved a draft solicitation for three important coal gasification technologies. I am very supportive of this newly found interest and hope that they are successful in attracting the kinds of proposals they seek.

However, I was also very disappointed that the SFC Board of Directors, including those members before this Committee today, has not recognized that technologies which Illinois Power and many other utilities feel are most practical for utility use, close to commercial application and more adaptable to some coal burning utility systems are worthy of consideration by the SFC. In the newly announced business plan and in the draft comprehensive strategy, I was unable to find any indication that the SFC has expressed any interest in considering low BTU gasification systems. It is these systems which offer the quickest and most satisfactory means, from our point of view, of bringing high sulfur coal back into the national energy picture in an environmentally acceptable way.

I would like to emphasize, Mr. Chairman, that this is not a localized view. Utilities from Maryland to Oklahoma have financially supported development of a low BTU gasification process. These utilities recognize that this process offers unique advantages to their systems and they have invested their moneys and their efforts in support of the technology. This effort has also been supported by EPRI and most recently by the Congress in the FY 1985 Continuing Resolution.

If I may, Mr. Chairman, let me give you and the members of this Committee just a few reasons why low BTU gas systems are more attractive to high sulfur coal burning utilities than medium BTU gas systems:

- Low BTU gas production does not require the construction and operation of an oxygen plant. Oxygen is required to upgrade the gas quality from low to medium BTU. An oxygen plant is expensive to build and its operation introduces another complexity and risk into the operation of the overall facility. Unless clearly warranted, it an unnecessary expense and complexity. Utilities such as Illinois Power have little familiarity with oxygen plants. Gaining such experience is an expense and complication we do not feel is worthwhile in the trade off between low and medium BTU gas.

- An oxygen plant limits the flexibility of the gasifier and the power plant. Without an oxygen plant the gasifier and power plant can operate at 20%-100% of rated output. With the oxygen plant, the operating range is presently designed to be 50-100%. As a result, the low BTU gas systems can serve as peaking, intermediate and base load systems while the medium BTU

gasifier with the oxygen plant is particularly suited for sustained base load operation. It is precisely this feature which has led the utilities participating in low BTU gasification demonstration to support this technology. These utilities serve many states in the region contiguous to and east of the Mississippi River. Their systems are heavily base loaded with coal burning and nuclear generation. To continue to use coal, they need a technology which can operate as a base load, intermediate load or peaking unit. Only low BTU gas systems efficiently offer the capability to satisfy the load following requirements of these utilities.

- Low BTU gas systems offer a utility operator significant environmental advantages as well. Low BTU gas systems operate at lower temperatures than medium BTU gas systems. As a result they produce very small quantities of NOx even without NOx mitigation equipment since the operating temperatures for production and combustion of the gas is below that necessary for NOx formation. Utilities will therefore have a system which is least obtrusive in terms of NOx production even without the added expense and complexity of NOx mitigation systems.

- Low BTU gas technologies are very close to commercial application. By the late 1980's, adequate demonstration of low BTU gas technology could be accomplished and utilities could have commercial plants on line in the early 1990's. This is not the case with any new, greenfield project. Adequate demonstration of commercial applications in these technologies could not take place until the early 1990's.

- The advanced state of low BTU gas technologies means that federal support to bring them to commercial readiness is much less than that necessary for a greenfield project.

- Low BTU gas systems are an All American technology. They will be offered and probably built on a turnkey basis by a vendor. This will mitigate the greater risk inherent in projects under a licensee arrangement. Following demonstration of the first of a kind plant, further risk to the utility is minimized or non existent. For utilities such as mine, this is a significant and very attractive feature of a U.S. vendor offered technology.

All in all, Mr. Chairman, these are compelling reasons for utilities such as Illinois Power. That is why we have been supporting low BTU gas technologies and it is why we believe that the SFC should seriously consider and insure the commercialization of these systems.

In summary, Mr. Chairman, my message today is a very simple one. The SFC appears to be embarking on an enthusiastic course to advance the synthetic fuels capabilities of the nation. It is also giving every indication that it believes the best market in which to accomplish this task is in the area of utility and industrial gasification of coal. To date their interest appears to be limited to medium BTU coal gasification technologies. In my view, and in the view of many utilities who want to burn high sulfur coal, the SFC should consider, and should assist where appropriate, technologies which produce low BTU gas for utility or industrial applications. At this time the SFC has apparently determined that low BTU gas technologies will not be included in their business plan, their comprehensive strategy nor in any solicitation. But they should be and I would hope that this Committee would strongly urge the nominees before you to make low BTU gas an important part of their strategy for the coming years.

Thank you once again for the privilege of appearing before you today. I would be happy to answer any questions you might have.

The CHAIRMAN. Thank you very much.
Mr. Matheson.

STATEMENT OF JIM MATHESON, DIRECTOR, SYNTHETIC FUELS PROJECT, ENVIRONMENTAL POLICY INSTITUTE

Mr. MATHESON. Thank you, Mr. Chairman. I'll just summarize my remarks.

The CHAIRMAN. Your entire statement will be placed in the record.

Mr. MATHESON. OK.

On behalf of the Environmental Policy Institute, I'm pleased to have the opportunity to appear before this committee. Today I'd like to focus on the path the Corporation intends to take in the future. It is my hope I might offer some thoughts which may be useful to the nominees as they pursue their responsibilities as members of the Board.

Of course, the nominees have already served as SFC Board members for almost 5 months since their recess appointment. In the past few months, the Board has adopted a statement of objectives and principles, basic business plan, and a draft comprehensive strategy.

The impetus behind these documents has been dubbed "the new realities" of the synfuels world by Mr. Corcoran. It's important to examine these new realities, since they are apparently the basis on which the new Board intends to run the Corporation. It appears the new realities recognize many of the concerns EPI has voiced with regard to the commercialization of immature technologies.

Upon close inspection, it becomes evident that there is little that is new in these new realities, and the Corporation has in fact been aware of these realities for some time. Part of the new realities are apparently the result of new direction that was given to the program when Congress lifted the production goals from the Corporation's mission last year.

However, it has been accepted reality, almost since the Energy Security Act was passed in 1980, that the production goals were unattainable. In February 1982, the SFC moved to resolve this issue when the Board of Directors adopted a resolution which stated the following—and I quote:

> Resolved that the Board adopts the Staff's recommendation of January 18, 1982, that the Board be prepared to trade off some near-term production for diversity that will improve the industry's capability for expansion and long-term production.

The new realities indicate synfuels technologies are not ready for large-scale commercialization. The problems of large-scale commercialization are illustrated by the three major projects that initially received Energy Security Act funding. When the act was passed, the Colony, Union, and Great Plains projects were considered to be the most advanced in the current state of synfuels technologies. This in turn leads to the new realities of focusing on smaller projects.

Since the initial solicitation for project, most all projects applying for SFC assistance have been scaled, and the SFC has been considering small projects for years. The new realities say the program will cost less, with commitments totaling far less than the nearly

$8 billion currently available to the SFC. Yet, it was reported in a trade publication in late March that an SFC Board member indicated the program would actually need the full $8 billion.

Whether these realities are new or old, they are the realities of the current synfuels world, and it is a welcome sign that the SFC may recognize those realities to a greater degree. The next issue the SFC and Congress must grapple with is the question of whether the SFC is the proper institution to foster synfuels development.

While this hearing is not meant to examine the problems within the Energy Security Act, it is important that the nominees consider these problems in the preparation of the comprehensive strategy which they intend to submit to Congress next month. If they determine that the best manner to proceed with the Federal synfuels development effort is not consistent with the Energy Security Act, they should feel comfortable in making that clear in the comprehensive strategy.

The Energy Security Act gave the Corporation a single focus: the commercialization of synfuels technologies. The most recent programmatic plans of the SFC appear to be development efforts. There is no question that synfuels technologies must be more fully developed before viable commercial utilization can be a reality.

And yet, in the Corporation's own words in a written response presented to this committee last year—and I quote: "The statutory purpose of the Corporation's program is not to develop technologies, but to bring those technologies that are most mature into commercial utilization."

Even if the nominees accept their synfuels development strategies as being within the limits of the authorizing legislation, they must still consider the issue of whether the SFC is the best vehicle to carry out their plans. For example, price guarantees are the primary funding mechanism of the SFC. If the future efforts of the SFC focus on developing technologies on a small scale, the nominees should consider whether a price guarantee agreement which guarantees the private sponsors a rate of return is the most efficient expenditure of Government funds.

The draft comprehensive strategy points to the overall savings of smaller projects as a benefit as opposed to paying a higher per-barrrel subsidy. The future of the plant after the assistance runs out must be considered by the nominees. Will these smaller plants be so far from economic viability that they will be forever dependent on Government subsidies to survive?

If that is the case, and the overall package still costs hundreds of millions of dollars, the nominees should consider if there is a less costly procedure for these development plans. Other options, such as direct cost-sharing agreements, may be less expensive and more productive in terms of producing a base of knowledge.

The draft comprehensive strategy describes the Corporation's new mission as a pursuit of knowledge and experience. The nominees should consider how much information will be made available. It would seem that a cost-sharing relationship which involved the Goverment, such as many current research and development programs, would allow for a greater utilization of data and an arrangement where sponsors are simply given price guarantees that guarantee a rate of return.

The nominees deserve congratulations for recognizing and further enunciating the realities of current synfuels technologies. The next step is to examine the true realities of the SFC carrying out the nominees' development plans. It is my hope that the nominees will approach this assignment with an open mind and a concern for finding the best role for the Federal Government in synfuels development.

Thank you.

[The prepared statement of Mr. Matheson follows:]

Statement of Jim Matheson

Mr. Chairman, my name is Jim Matheson, and I am the Director of the Synthetic Fuels Project at the Environmental Policy Institute (EPI). On behalf of EPI, I am pleased to have the opportunity to appear before this Committee today regarding the nominations of Eric Reichl, Paul MacAvoy, and Tom Corcoran to be members of the Board of Directors of the Synthetic Fuels Corporation (SFC).

Since the early 1970's, EPI has been actively involved in the discussions over the proper federal role in the development of synthetic fuels technologies. Since the passage of the Energy Security Act (ESA), EPI has closely monitored the activities of the SFC and has evaluated many of the projects which have applied for SFC financial assistance. EPI has continually voiced concern with regard to the present federal synthetic fuels commercialization effort. In March of this year, I submitted written testimony for this Committee's hearing on the SFC in which I reviewed the problems which have plagued the program's history to date. That historical analysis concluded that the narrow focus of commercialization which the Energy Security Act gave the SFC was an unrealistic notion. Since that historical account and corresponding views of EPI are already on record with the Committee, I will avoid a repetition of those matters.

Today, I would like to focus on the path the Corporation intends to take in the future. After a rocky four years of operation at the SFC, these nominees are entering a difficult situation, but they have the benefit of the lessons of the past

four years to help guide their actions. It is my hope that I might offer some thoughts which may be useful to the nominees as they pursue their responsibilities as members of the Board.

Of course, the nominees have already served as SFC Board Members for almost five months since they were recess appointments, and are already aware of many of the workings of the SFC. The policy positions they have espoused to date have been characterized as the "new SFC." Mr. Corcoran, as Vice-Chairman of the Corporation and Chairman of the Comprehensive Strategy Committee, has played a particularly active role in defining the SFC's program. In these past few months, the Board has adopted a Statement of Objectives and Principles, a Basic Business Plan, and a Draft Comprehensive Strategy. The impetus behind the changes incorporated in these documents has been dubbed "the new realities" of the synfuels world by Mr. Corcoran.

It is important to examine these "new realities," since they are apparently the basis on which the new Board intends to run the Corporation. It appears the "new realities" recognize many of the concerns EPI has voiced with regard to the commercialization of immature technologies. Upon close inspection, it becomes evident that there is little that is new in these "new realities," and the Corporation has in fact been aware of these realities for some time.

Part of the "new realities" are apparently the result of new direction that was given to the program when Congress lifted the production goals from the Corporation's mission last year. This

allows the Corporation to pursue a variety of synfuels technologies, instead of concentrating assistance on a small number of projects and limited technologies simply to generate greater production capacity. There is little that is new here. The original Energy Security Act called for the pursuit of a diverse set of resource/technology combinations. Moreover, it has been an accepted reality almost since the Energy Security Act was passed in 1980 that the production goals in the Act were unattainable. Still, there was an apparent conflict in the Act since it contained both diversity and production goals. However, in February, 1982 the SFC moved to resolve this conflict when the Board of Directors adopted a resolution which stated the following: "Resolved, that the Board adopts the staff's recommendation of January 18, 1982 that the Board be prepared to trade off some near-term production for the diversity that will improve the industry's capability for expansion and long-term production." It should be noted that this course of action was accepted by all observers, with there being no public complaint from Congress or the synfuels industry concerning the adoption of this resolution.

The "new realities" indicate synfuels technologies are not ready for large scale commercialization. Critics of the SFC have made this claim since the Corporation was created. The problems of large scale commercialization are illustrated by the three major projects that initially received Energy Security Act funding. When the Act was passed, there were three proposed projects which were considered to be the most advanced in the current state of syn-

fuels technologies--the Colony Oil Shale Project, the Union Oil Shale Project, and the Great Plains Coal Gasification Project. The troubles encountered by all three projects are a clear indication of the problems of commercializing present technologies. Since these projects received their funding awards in 1981, all other large-scale projects have been cancelled, postponed, or scaled down.

This in turn leads to the "new realities" of focussing on smaller projects. Since the initial solicitation for projects, most all projects applying for assistance have been scaled down, and the SFC has been considering many small projects for years.

The "new realities" say the program will cost less, with commitments totaling far less than the nearly $8 billion currently available to the SFC. Yet, it was reported in a trade publication in late March that an SFC Board Member indicated the program would actually need the full $8 billion. If price guarantees are to be the principle funding mechanism employed by the SFC, smaller projects will still result in huge outlays for the government.

Whether these realities are "new" or "old," they are the realities of the current synfuels world, and it is a welcome sign that the SFC may recognize those realities to a greater degree. The question to be answered is one of how to best proceed. The next issue the SFC and Congress must grapple with is the question of whether the SFC is the proper institution and appropriate mechanism to foster synfuels development.

While this hearing is not meant to examine problems within the Energy Security Act, it is important that the nominees consider these problems in the preparation of a comprehensive strategy which they intend to submit to Congress next month. If they determine that the best manner to proceed with a federal synfuels development effort is not consistent with the Energy Security Act, they should feel comfortable in making that clear in the comprehensive strategy.

The Energy Security Act gave the Corporation a single focus: commercialization of synfuels technologies. The most recent programmatic plans of the SFC appear to be development efforts. There is no question that synfuels technologies must be more fully developed before viable commercial utilization can be a reality. And yet in the Corporation's own word's in a written response presented to this Committee last year, "the statutory purpose of the Corporation's program is not to develop technologies but to bring those technologies that are the most mature into commercial utilization." The nominees should examine this issue and determine the suitability of their plans for SFC actions in light of this fact.

Even if the nominees do accept their synfuels development strategies as being within the limits of the authorizing legislation, they must still consider the issue of whether the methods available to the SFC are the best manner in which to carry out their plans. For example, price guarantees are the primary funding mechanism at the SFC. If the future efforts at the SFC focus on

developing technologies at a small scale, the nominees should consider whether a price guarantee agreement which guarantees the private sponsors a rate of return is the most efficient expenditure of government funds.

The Draft Comprehensive Strategy points to the overall savings of smaller projects as a benefit to paying a higher per barrel subsidy. The future of the plant after the assistance runs out must be considered by the nominees. Will these smaller plants be so far from economic viability that they will be forever dependent on government subsidies to survive? If that is the case, and the overall package still costs hundreds millions of dollars, the nominees should consider if there is a less costly procedure for these development plans. Other options such as direct cost sharing agreements may be less expensive and more productive in terms of producing a base of knowledge through an orderly collection of data.

The Draft Comprehensive Strategy describes the Corporation's new mission as a pursuit of knowledge and experience. The nominees should consider how much information will be made available. It would seem that a cost sharing relationship which involved the government (such as many current research and development programs) would allow for a greater utilization of data than an arrangement where sponsors are simply given price supports that guarantee a rate of return.

The nominees deserve congratulations for recognizing and enunciating the realities of current synfuels technologies. The

next step is to examine the true realities of the SFC carrying out the nominees' synfuels development plans. It is my hope that the nominees will approach this assignment with an open mind and a concern for finding the best role for the federal government in synfuels development.

The CHAIRMAN. Thank you, gentlemen, very much for your statements. We may have some questions which we will submit to you for response to the record in writing.

I appreciate very much your appearance and testimony here this morning.

This concludes the hearing of the committee. The committee will be adjourned.

[Whereupon, at 12:25 p.m., the hearing was adjourned.]

[Subsequent to the hearing, Mr. Banovic submitted the following letter:]

United Mine Workers of America

JOHN J. BANOVIC
INTERNATIONAL SECRETARY-TREASURER

TELEPHONE
(202) 842-7260

UNITED MINE WORKERS' BUILDING
900 FIFTEENTH STREET, N.W.
Washington, D.C.
20005

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
MAY 17 1985
WASHINGTON, D.C. 20510

May 13, 1985

Honorable James A. McClure
Committee on Energy and Natural Resources
SD-358 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Mr. Chairman:

I appreciate this opportunity to submit testimony for the record regarding the Synthetic Fuels Corporation and its revised scope and business plan. The United Mine Workers of America supported the creation of the SFC as a means to reduce America's reliance on foreign energy producers through the utilization of our domestic energy resources. No resource has more potential for increased use than coal. It is in regard to the SFC's new approach to the development of coal based processes that I wish to comment today.

The Corporation's Phase I Business Plan places significant emphasis on fostering coal technologies which are economic and ameliorate adverse emissions. However, there appears to be a bias towards coal gasification processes with a pressurized oxygen blown component. These technologies produce a synthetic fuels product which can be put to a number of uses. While I support this effort and applaud the priority being placed on coal as indicated by the pending draft solicitation, I believe that this narrow search for viable processes is excluding technologies which produce the one product with proven market demand - low Btu gas.

There is at least one fairly mature coal gasification project in the country today which produces low Btu gas. It is an option several utilities are exploring for near-term replacement capacity. We support it because it uses high sulfur coal with no attendant environmental problems. Over 90% sulfur dioxide removal can be realized with virtually no nitrogen oxide or particulate emissions. This is a feat that no medium or high Btu system can boast. It allows utilities accustomed to burning coal to do so at a cost competitive with a new coal fired power plant with flue gas desulfurization equipment. Perhaps most importantly, it gives

the utilities a product that can't be taken and reallocated to another market in an energy emergency as is the case with a medium Btu product.

The United Mine Workers believes every attempt must be made to increase the use of coal. It is the cheapest and most reliable energy resource available. Under this country lies a tremendous treasure of coal reserves and we have the miners ready and willing to bring it to the surface. It should be a national priority to dedicate federal energy policy towards the goal of enhancing this resource for the benefit of all Americans. The SFC has the opportunity to be the catalyst in this quest through the support of all forms of coal gasification and liquefaction processes. To preclude any options, like low Btu gas, would be denying potential users perhaps the most economic and environmentally sound technology with the nearest commercial application.

I appreciate your consideration and encourage you to explore the low Btu gas issue with the SFC Board Members.

Sincerely,

John J. Banovic
UMWA International
Secretary-Treasurer

APPENDIX I

INFORMATIONAL STATEMENT OF THOMAS CORCORAN

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

STATEMENT FOR COMPLETION BY PRESIDENTIAL NOMINEES

Name: Corcoran (LAST) Thomas (FIRST) Joseph (OTHER)

Position to which nominated: Member, Board of Directors U.S. Synthetic Fuels Corporation

Date of nomination: October 10, 1984

Date of birth: 23 (DAY) May (MONTH) 1939 (YEAR) Place of birth: Ottawa, Illinois

Marital status: Married Full name of spouse: Helenmarie A. Corcoran

Name and ages of children: Camilla - 22; Steven - 18; Evan - 20; Monica - 15; Philip - 19

Education:

Institution	Dates attended	Degrees received	Dates of degrees
St. Bede Academy (Peru, IL)	1953-55		
Marquette H.S. (Ottawa, IL)	1955-57		
Notre Dame University	1957-61	B.A.	1961
University of Illinois	1961-62		
University of Chicago	1962-63		
Northwestern University	1966-67		

Employment record: List below all positions held since college, including the title and description of job, name of employer, location, and dates.

7/63-1/66 U.S. Army Artillery Officer, Germany

1/66-6/66 Sales, Hunt-Wesson Foods, Chicago, Illinois

6/66-1/67 Campaign aide, Illinois Senate Republican Committee, Chicag

1/67-8/69 Legislative aide, Illinois State Senate, Springfield, Ill.

8/69-1/73 Director, State of Illinois Office, Washington, D.C.

1/73-7/74 Staff Director, Illinois State Senate, Springfield, Illinoi

7/74-1/77 Vice President, Chicago & North Western Railroad, Chicago

1/77-11/84 Congressman, U.S. House of Representatives, Washington, DC

Employment record—Continued

12/84-Present Vice Chairman, U.S. Synthetic Fuels Corporation

Military service: Describe any military service not listed above, including dates, rank, and type of discharge.

7/63-1/66 U.S. Army, Germany. Artillery Officer.
1st Lieutenant. Honorable Discharge

Honors and awards: List below all scholarships, fellowships, honorary degrees, military medals, honorary society memberships, and any other special recognitions for outstanding service or achievement.

None

Memberships: List below all memberships and offices held in professional, fraternal, business, scholarly, civic, charitable and other organizations.

	Organization	Dates	Office held (if any)
1.	Aurora University Aurora, Illinois	5/80 - 1/85	Board of Directors
2.	American Legion Post 33 Ottawa, Illinois	1974 - Present	
3.	Capitol Hill Club Washington, D.C.	1977 - Present	

Published writings: List the titles, publishers and dates of any books, articles, or reports you have written.

None

Future employment relationships:

1. Will you sever all connections with your present employer, business firm, association or organization if you are confirmed by the Senate?

I am presently serving as Vice Chairman of the U.S. Synthetic Fuels Corporation and, if confirmed, wouldn't be employed outside the SFC.

2. Do you have any plans after completing government service to resume employment, affiliation or practice with your current or any previous employer, business firm, association or organization?

No

3. Has a commitment for employment after you leave government been made to you by anyone? Have you made any such commitment?

No

4. (a) If you have been appointed for a fixed term, do you expect to serve the full term?

Yes

Future employment relationships—Continued

(b) If you have been appointed for an indefinite term, are there any known limitations on your willingness or ability to serve for the foreseeable future?

Not applicable

Financial statement:

1. Attach a copy of your Executive Personnel Financial Disclosure Report (SF 278).

2. List sources, amounts and dates of all anticipated receipts from deferred income arrangements, stock options, uncompleted contracts and other future benefits which you expect to derive from previous business relationships, professional services and firm memberships or from former employers, clients, and customers. Amounts should be indicated by the categories established for reporting income on Form SF 278, Schedule A.

None

3. Are you currently a party to any legal action? If so, describe its nature and status.

No

4. Have you ever declared bankruptcy? If so, describe the circumstances.

No

5. Have you filed a Federal income tax return for each of the last 10 years? If not, please explain.

Yes

6. Has the Internal Revenue Service ever audited your Federal tax return? If so, what resulted from the audit?

No

Potential conflicts of interest:

1. List any investments, obligations, liabilities, or other relationships which might involve potential conflicts of interest with the position to which you have been nominated.

None

2. Describe any business relationship, dealing or financial transaction (other than taxpaying) that you have had during the last 10 years with the Federal Government, whether for yourself or relatives, on behalf of a client, or acting as an agent, which might in any way constitute or result in a possible conflict of interest with the position to which you have been nominated.

None

3. Describe any lobbying activity which you have performed during the past 10 years with respect to legislative or administrative actions at the Federal, State or local level.

As Vice President of the Chicago and North Western Transportation Company, I was responsible for monitoring legislation in the U.S. Congress affecting the CNW Railroad and the railroad industry.

4. Have you been informed of the conflict of interest laws and regulations applicable to the position to which you have been nominated?

Yes

Potential conflicts of interest—Continued

5. Explain how you will resolve any potential conflict of interest that may be disclosed by your responses to this form and the attachments thereto. Attach a statement of the appropriate agency ethics official explaining the applicable laws or regulations, any potential conflicts, and the action required to resolve such conflicts.

I am not aware of any conflicts that have been disclosed by my responses.

6. Explain how you will resolve any potential conflicts of interest that may arise in the future if you are confirmed for the position for which you have been nominated.

First, my family investment portfolio does not now include any energy investments. Second, we will not make such investments while serving at the SFC which would affect my voting rights. Third, I have read and will comply with SFC disclosure procedures. I do not anticipate that any conflict of interest will arise; however, should any arise, I will comply with Section 118 of the Energy Security Act and abide by the decision of my colleagues on the Board.

Public disclosure: Do you have any objections to this form and the attachments thereto being made public?

No

AFFIDAVIT

I, _____, being duly sworn, hereby state that I have read the foregoing Statement for Completion by Presidential Nominees, including all attachments thereto, and that the information provided therein is, to the best of my knowledge and belief, current, accurate, and complete.

(Signature of Nominee)

Subscribed and sworn to before me this 25th day of April, 19 85

Notary Public

My Commission Expires July 1, 1988

Form approved by the Committee February 5, 1985.

U.S. GOVERNMENT PRINTING OFFICE: 1985—43-096

United States Synthetic Fuels Corporation
2121 K Street, N.W. Washington, District of Columbia 20586 Telephone (202) 822-6600

February 4, 1985

Mr. David H. Martin
Director, Office of Government Ethics
Office of Personnel Management
P. O. Box 14108
Washington, D.C. 20044

Dear Mr. Martin:

Mr. Thomas J. Corcoran has been nominated by the President for appointment to the Board of Directors of the United States Synthetic Fuels Corporation, subject to confirmation by the Senate. The position in question was created by Section 116(a)(2) of the Energy Security Act (the "Act") (P.L. 96-294), which established the Corporation and defines its authorities and those of its Board of Directors. The duties and obligations of a member of the Board are set forth in the Act. No other position description is available. Mr. Corcoran also occupies the full-time officer position of the Corporation of Acting Vice Chairman of the Board. A completed Financial Disclosure Report (SF-278) signed by Mr. Corcoran is forwarded herewith. As the Corporation's designated Ethics Officer, I have reviewed Mr. Corcoran's report in the context of the conflict of interest provisions of the Act and the Policy on Standards of Conduct approved by the Corporation's Board of Directors on June 17, 1982. This letter is addressed to you in compliance with Section 734.604(c)(iii) of the regulation governing the review of executive personnel financial disclosure reports.

The conflict of interest provisions applicable to Corporation personnel are set forth in Section 118 of the Energy Security Act and in the aforementioned policy. Section 118 of the Act makes applicable to the Directors of the Corporation the financial disclosure provisions of Title II of the Ethics in Government Act of 1978 that apply to individuals occupying positions compensated under the Executive Schedule. In addition, subsection 118(c) prohibits any Director from voting on any matter respecting any application, contract, claim, or other particular matter pending before the Corporation in which, to his knowledge, the Director has a financial interest. For purposes of this prohibition, the financial interests of a Director's spouse, minor child, partner or an organization in which a Director has any of several specified relationships including the negotiation of an arrangement for prospective employment, are attributed to that Director. This prohibition may be waived by the Board of Directors as to any particular matter if a majority of the Board determines that the financial interest is too remote or too inconsequential to affect the integrity of a Director's services as to that matter.

Section 118 of the Act also applies to the Directors of the Corporation the post-employment restriction contained in 18 U.S.C. 207(a) as if they were officers and employees of the executive branch of the United States Government. Section 207(a) prohibits permanently any former Corporation Director from representing any party other than the United States with respect to any particular matter in which the former Director, during his Corporation service, participated personally and substantially on behalf of the United States.

A principal focus of the Corporation's policy, which applies to all Corporation personnel, is on employee financial interests in participating organizations. For purposes of the policy, a "participating organization" means any organization or organizations undertaking a project involving the Corporation or formally proposing to undertake such a project. The term also includes other entities participating in such projects in a material way such as project-related financial institutions, investment bankers, and key construction, engineering, and other firms. A "financial interest" includes securities, partnership interests, or any right to receive financial benefits from such an organization, which is owned by the employee or a member of his household. The Corporation's policy does not require the divesture of such interests acquired prior to joining the Corporation, but prohibits the acquisition of any such interests while one is employed by the Corporation.

Based on my review, it is my opinion that Mr. Corcoran's report evidences no conflict of interest under applicable laws and regulations. I so certify.

If I can be of further assistance in this matter, please let me know.

Sincerely,

Owen J. Malone
Ethics Officer

United States Synthetic Fuels Corporation
2121 K Street, N.W. Washington, District of Columbia 20586 Telephone: (202) 822-6600

April 29, 1985

Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Please be advised that pursuant to section 201(b) of the Ethics in Government Act of 1978, as amended, I have informed the appropriate ethics officials that the information required by section 202(a)(1)(A) with respect to income and honoraria is amended as follows:

Page 2 of SF 278 should reflect receipt of $2,500.00 on January 7, 1985 from Commonwealth ~~Edison~~ for consulting work performed in December 1984.

Sincerely,

Tom Corcoran
Vice Chairman

_____ss

Subscribed and sworn to before me this 29th day of April, 1985.

Notary Public

My Commission Expires June 15, 1989

cc: Hon. J. Bennett Johnston

United States of America
Office of Government Ethics

Office of Personnel Management
Washington, D.C. 20415

FEB 26 1982

Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

In accordance with the Ethics in Government Act of 1978, I enclose a copy of the financial disclosure report filed by Thomas J. Corcoran, who has been nominated by President Reagan as a member of the Board of Directors of the United States Synthetic Fuels Corporation ("the Corporation"). Mr. Corcoran occupies the full-time position of Acting Vice Chairman of the Board.

We have reviewed the report and have also obtained advice from the Corporation concerning any possible conflict in light of the Corporation's functions and the nominee's proposed duties. As a Director, Mr. Corcoran is subject to the requirements of Section 118 of the Energy Security Act and the policy which the Board and the Corporation have developed for their guidance with regard to conflicts of interest. That section prohibits a Director from voting on a particular matter if it involves his or her financial interest unless the Board, by majority vote, determines that the interest is too remote or too inconsequential to affect the integrity of the Director's services for the Corporation in that particular matter.

We have been advised by the Corporation's ethics official that Mr. Corcoran is aware that if a particular matter arises which involves his financial interests, he will either refrain from voting or request a waiver from the Board following the procedure established in Section 118(c)(3) of the Energy Security Act.

Based on these considerations, we believe that Mr. Corcoran is in compliance with the provisions of the Energy Security Act and the Corporation's policy governing conflicts of interest.

Sincerely,

David H. Martin
Director

Enclosure

47-914 O—85—6

X

1-31-85 FEB 7 1985

Corcoran	Thomas J.		
Member, Board of Directors	U.S. Synthetic Fuels Corporation	11/28/84 - date of appt.	
2121 K Street, N.W., Washington, D.C. 20586		523	(202)822-6353
Energy and Natural Resources			X
U. S. Congressman, 14th District of Illinois		Jan. 1977 - Nov. 1984	

Thomas J. Corcoran

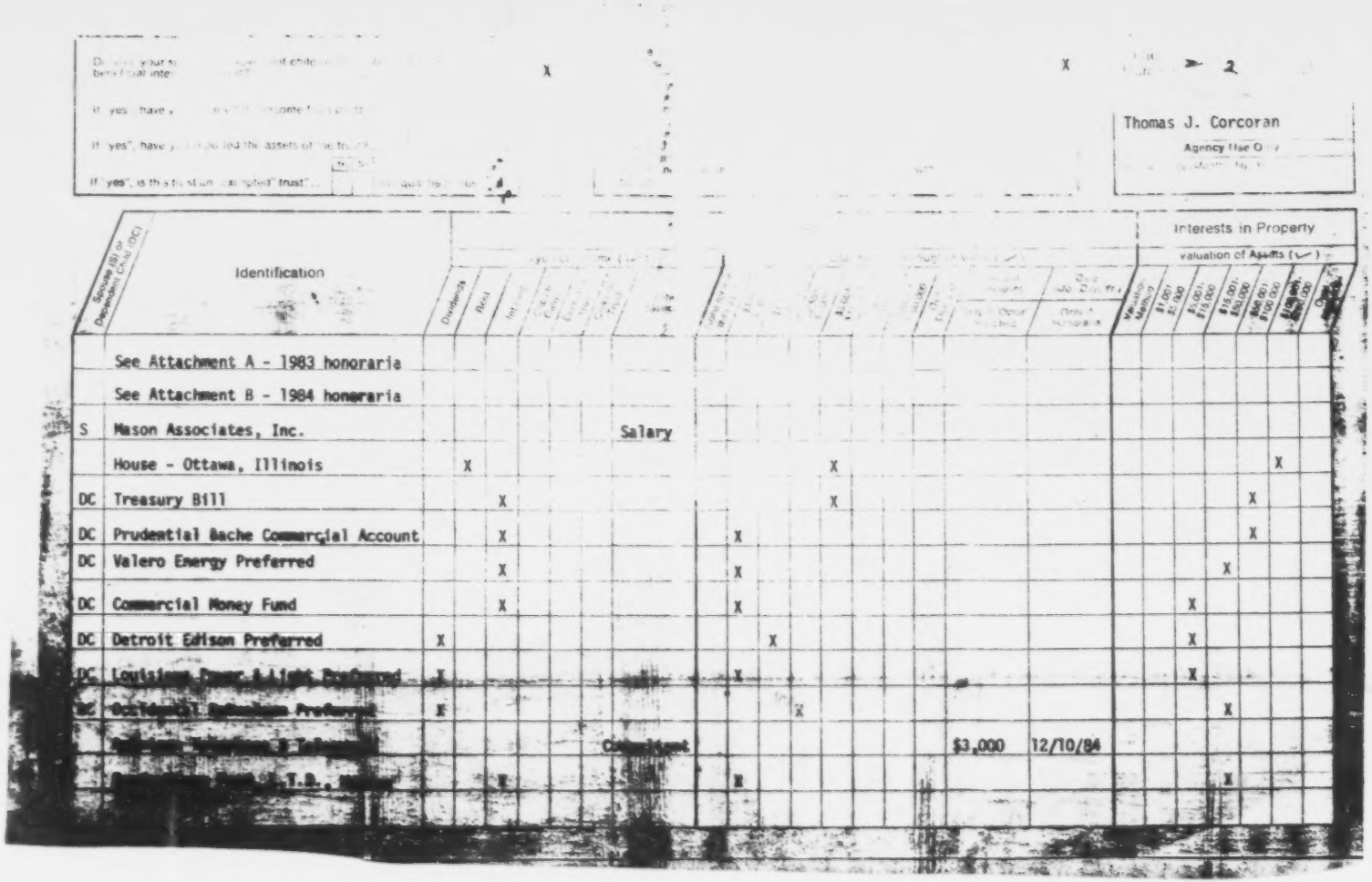
1/30/85

Jan. 30, 1985

2-4-85

2-26-85

* See letter of February 4, 1985 to Mr. David H. Martin, Director, Office of Government Ethics

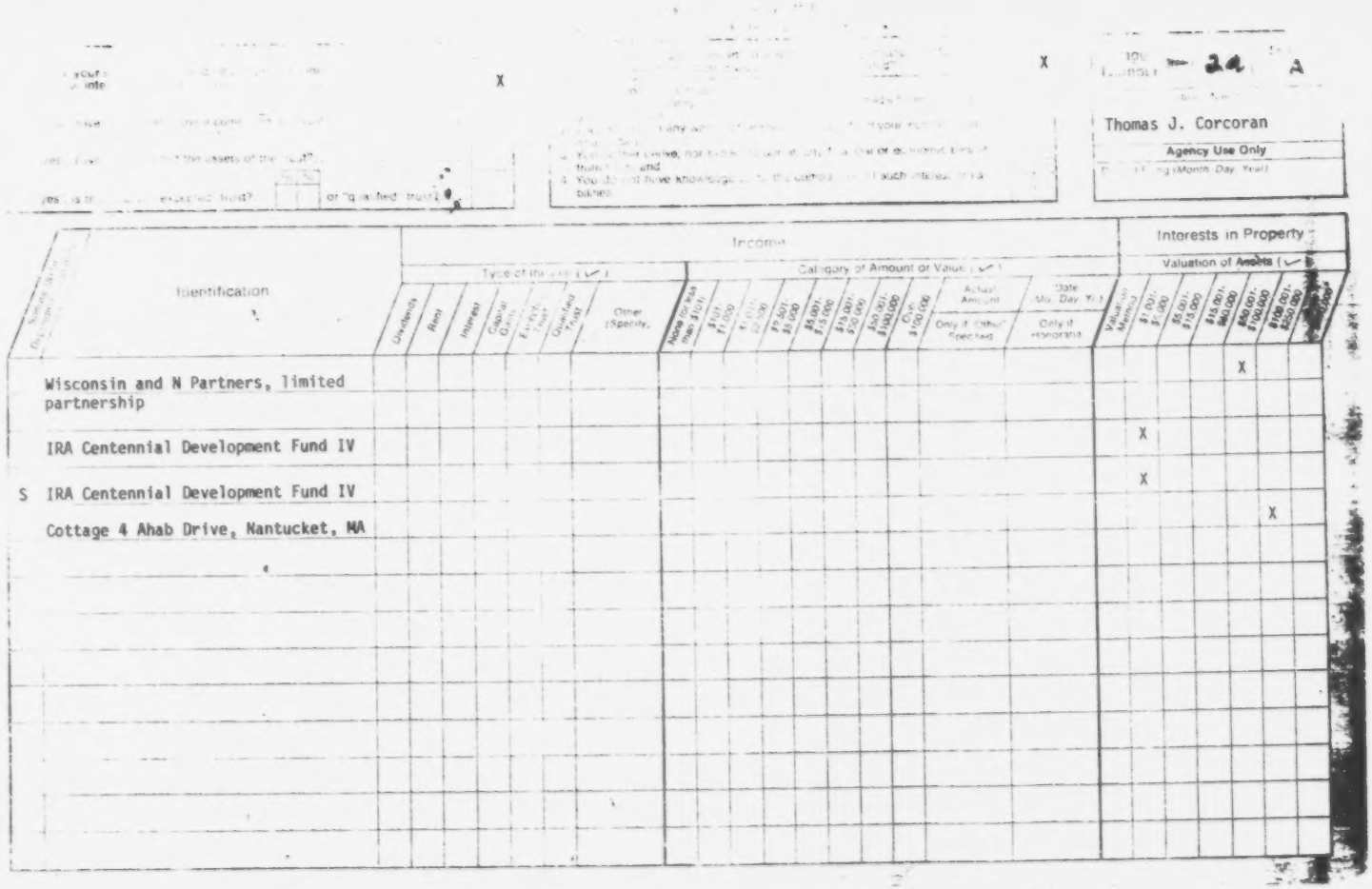


Thomas J. Corcoran

Agency Use Only

Spouse (S) or Dependent Child (DC)	Identification	Dividends	Rent	Interest	Capital Gains	Royalties	Other	Interests in Property	Valuation of Assets	Other
	See Attachment A - 1983 honoraria									
	See Attachment B - 1984 honoraria									
S	Mason Associates, Inc.						Salary			
	House - Ottawa, Illinois		X							X
DC	Treasury Bill			X						X
DC	Prudential Bache Commercial Account			X						X
DC	Valero Energy Preferred			X						X
DC	Commercial Money Fund			X					X	
DC	Detroit Edison Preferred	X							X	
DC	Louisiana Power & Light Preferred	X							X	
DC	Oklahoma Gas & Electric Preferred	X								X
	[illegible]						Consultant			
	[illegible] T.B. [illegible]			X						X

Other	Date	Value
$3,000	12/10/84	



Thomas J. Corcoran

Agency Use Only

Identification	Income: Type of Income	Income: Category of Amount or Value	Interests in Property: Valuation of Assets
	Dividends; Rent; Interest; Capital Gains; Farm Rent; Qualified Trust; Other (Specify)	Actual Amount; Only if "Other" Checked; Date (Mo. Day Yr.); Only if Honoraria	Valuation Method; $1,001 - $15,000; $15,001 - $50,000; $50,001 - $100,000; $100,001 - $250,000
Wisconsin and N Partners, limited partnership			X
IRA Centennial Development Fund IV			X
S IRA Centennial Development Fund IV			X
Cottage 4 Ahab Drive, Nantucket, MA			

ATTACHMENT A

SOURCE	TYPE	DATE	AMOUNT
Society of the Plastics Industry, Inc.	Honorarium	1/31/83	$1,000
Aluminum Recycling Association	Honorarium	2/24/83	$1,000
Natl. Council of Farmer Cooperatives	Honorarium	3/ 2/83	$1,000
Natl. Assn. of Manufacturers	Honorarium	3/ 8/83	$1,000
International Business Machines Assn.	Honorarium	3/15/83	$1,500
Midwest Gas Association, Inc.	Honorarium	3/15/83	$1,000
Illinois Petroleum Marketers Assn.	Honorarium	3/21/83	$1,000
American Telephone & Telegraph	Honorarium	4/ 1/83	$2,000
E.I. DuPont De Nemours & Co.	Honorarium	5/ 4/83	$1,000
Natl. Office Machine Dealers Assn.	Honorarium	5/ 6/83	$1,000
Law Offices of Preston, Thorgrimson, Ellis & Holman	Honorarium	5/16/83	$1,000
American University	Honorarium	6/22/83	$ 400
Columbia Institute for Political Research	Honorarium	6/22/83	$1,000
Natl. League of Postmasters	Honorarium	7/21/83	$1,000
Independent Petroleum Association of America	Honorarium	8/24/83	$2,000
Grocery Manufacturers of America	Honorarium	9/13/83	$1,000
Natural Gas Supply Association	Honorarium	9/14/83	$ 500
Great Lakes Cable TV Expo	Honorarium	10/ 3/83	$1,000
The Tobacco Institute	Honorarium	10/17/83	$1,000
		TOTAL:	$20,400

ATTACHMENT B

Source	Type	Date	Amount
Council of Industrial Boiler Owners	Honorarium	1/05/84	$1,000
Illinois Bell Telephone Company	Honorarium	1/20/84	$2,000
Natl. Assn. of Petroleum Analysts	Honorarium	2/24/84	$1,000
University of Illinois	Honorarium	3/16/84	$ 500
Sisters of Mercy of the Presentation Central Management Corporation	Honorarium	3/29/84	$1,000
American Petroleum Institute	Honorarium	4/24/84	$1,500
Americans for a Safe Israel	Honorarium	5/24/84	$ 100
American University	Honorarium	6/29/84	$ 400
Illinois Commerce Commission	Honorarium	7/16/84	$1,500
Talcott, McCabe & Associates (Holiday Inn)	Honorarium	7/19/84	$ 500
CATPAC (Conservatives Acting for Texas)	Honorarium	8/27/84	$1,000
Conference of State Bank Supervisors	Honorarium	9/26/84	$1,000
Illinois Bell Telephone Company	Honorarium	10/22/84	$2,000
Pacific Bell	Honorarium	10/31/84	$1,000
Whitney Communications Corporation (Oil Daily)	Honorarium	11/05/84	$1,500
U.S. Chamber of Commerce	Honorarium	11/28/84	$ 500

PURCHASES, SALES AND EXCHANGES

This schedule is applicable only to [illegible] of annual and termination reports.

Report Applicable Transactions, Even If Also Reported on Schedule A

Page Number 3 of 8

Reporting Individual's Name: Thomas J. Corcoran

Agency Use Only

Date of Filing (Month, Day, Year): 1-31-85

S or DC	Identification of Property (real and personal)	Type of Transaction			Date (Month, Day, Year)		Category of Amount or Value ($)					
		Purchase	Sale	Exchange	Purchase	Sale or Exchange	$1,001 to $15,000	$15,001 to $50,000	$50,001 to $100,000	$100,001 to $250,000	$250,001 to $500,000	Over $500,000
	Wisconsin and N Partners, limited partnership	X			8/24/84				X			
	IRA Centennial Development Fund IV	X			8/15/84		X					
S	IRA Centennial Development Fund IV	X			8/15/84		X					
	Cottage 4 Ahab Drive, Nantucket, Massachusette	X			11/30/84					X		
DC	Valero Energy Preferred		X			6/27/84		X				
DC	Detroit Edison Preferred		X			6/27/84		X				
DC	Louisiana Power and Light Preferred		X			6/27/84		X				
DC	Occidental Petroleum Preferred		X			6/27/84			X			

4

Thomas J. Corcoran

Agency Use Only

1-31-85

	Brief Description	Value
None		

(b) Other Gifts—List each source totaling $100 or more in value

Source (Name and Address)	Brief Description	Value
None		

(c) Reimbursements—List each source totaling $250 or more in value

Source (Name and Address)		
Sisters of Mercy of the Presentation	airfare reimbursement for speech on 3/29/84	$ 528
Illinois Commerce Commission	airfare reimbursement for speech on 6/19/84	$ 436
Conference of State Bank Supervisors	airfare reimbursement for speech on 9/06/84	$ 676
Whitney Publications (Oil Daily)	airfare reimbursement for speech on 9/25/84	$ 330
Pacific Bell	airfare reimbursement & lodging for speech on 10/31/84	$1,790

Thomas J. Corcoran 1-31-85 5

See Attachment A

	Type of Organization			
U. S. House of Representatives, Washington, D.C.	Legislative	Member	1/77	11/84
Aurora College Board of Directors, Aurora, Illinois	Educational	Member	5/80	Present
U. S. Synthetic Fuels Corporation, Washington, D.C.		Acting Vice Chairman	12/84	Present

None

Description of Terms of Any Agreement or Arrangement	Date (Mo., Day, Yr.)
None	

ATTACHMENT A

1. Citizen's Bank, Providence, Rhode Island. House mortgage at 12½%, 11/30/84. Category $100,001 to $250,000

2. First National Bank of Oglesby, Illinois. Promissory demand note at 13%, 11/21/84. Category $15,001 to $50,000.

3. Hummock Pond of Nantucket. Promissory demand note at 12½%, 11/30/84. Category $15,001 to $50,000.

4. Merchants National Bank of Aurora, Illinois. Promissory demand note, paid 5/84. Category $15,001 to $50,000.

5. Ottawa Federal Savings and Loan, Ottawa, Illinois. House mortgage. $50,001 to $100,000. Rate of interest is 12½%.

6. Sovran Bank, N.A., Arlington, Virginia. Promissory demand note at 11.5%, 10/1/84. Category $50,001 to $100,000.

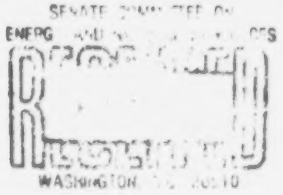
7. Wisconsin and N Partners, Washington, D.C., Limited partnership of 1.94%. Promissory note, 8/24/84. Category $50,001 to $100,000. No interest.

APPENDIX II

RESPONSES TO ADDITIONAL COMMITTEE QUESTIONS FROM THE NOMINEES

United States Synthetic Fuels Corporation
2121 K Street, N.W. Washington, District of Columbia 20586 Telephone (202) 822-6600

May 14, 1985



Mr. Richard Grundy
Professional Staff Member
Senate Committee on Energy and
Natural Resources
Room 358
Dirksen Senate Office Building
Washington, DC 20510

Dear Richard:

Attached are responses to the questions which members of the Committee sent to the nominees to the Board of Directors of the U.S. Synthetic Fuels Corporation -- Tom Corcoran, Eric Reichl and Paul MacAvoy.

Sincerely yours,

Don Webster

Don Webster
Vice President
External Relations

ANSWERS

TO QUESTIONS DIRECTED TO MR. CORCORAN

AT CONFIRMATION HEARINGS

FOR BOARD OF DIRECTORS, U.S. SYNTHETIC FUELS CORPORATION

May 3, 1985

Q.1. Senator Warner: Last year when Mr. Noble appeared before this committee he assured us that 1984 was going to be the year of coal. Now it's 1985, and I wan to know whatever happened to the year of coal.

A.1. During 1984, the Corporation undertook substantial efforts to develop coal projects and did execute an assistance agreement with the Dow Syngas project. However, progress was disappointing, largely because the Corporation did not have a Board in place that could make the judgments and set the new directions necessary in light of the declining economic attractiveness of synthetic fuels projects. Since the new Board has been in place, we have moved forward to define what is necessary and appropriate under current conditions, and have clearly decided that coal is the principal area for action in Phase I; this is demonstrated by the number of coal resource-technology categories given priority in the Business Plan. We have had discussions with sponsoring groups interested in working with us to develop coal projects that will implement the Business Plan in a cost-effective way, and I am confident that we will be able to reach agreement with several of these groups.

Q.2. Senator Warner: I have expressed to you and other members of the board my very strong interest in the Synthetic Fuels Corporation's supporting coal-water projects. I stand by that support. What is the status of the Corporation's Coal Water Solicitation?

A.2. The new Board decided unanimously that industrial use of coal-water fuels is being advanced adequately by the private sector and hence Corporation involvement would be neither necessary nor appropriate. In regard to utility use of coal-water fuels, the

information from industry has been mixed. Those utilities and fuel suppliers that stand to gain directly from Corporation subsidies are, naturally enough, encouraging us to proceed. But suppliers of coal-water fuels who are trying to enter the market without Corporation subsidies have told us that our involvement is not necessary and, in fact, would interfere with their efforts to establish this important technology in the normal commercial manner. It is my view, speaking as only one Director, that coal-water fuels are not like other synthetic fuels in technological complexity, required size of investment, or time-scale, and hence are likely to be introduced into the market in a timely way when the price is right, without requiring Corporation involvement. However, the Board is continuing to monitor developments in this area, and if we become convinced that the Corporation can be helpful without interfering with the efforts of the private sector, we will take the appropriate action.

Q.3. Senator Warner: I commend you for the development of your Phase I Business Plan which specifies the kinds of projects you intend to fund. Where are you going to get the projects? In other words, are you convinced the private sector is interested in the same kinds of projects you have identified as important national priorities?

A.3. We have discussed with potential sponsors and others the possibility of developing projects that would implement the Business Plan in a cost-effective manner and have gotten generally encouraging responses. The kinds of projects the Board thinks are appropriate are the kinds of projects that most knowledgeable people in the private sector acknowledge to be appropriate at this stage in the development of the industry, even though they are not necessarily what some sponsors would most like us to subsidize. I am confident that, with leadership and patience on the part of the Corporation, we will be able to develop, in partnership with industry, a good set of projects to implement the Phase I Business Plan.

Q.4. Senator Warner: I am also concerned that there are certain other very promising technologies in which the private sector has an interest and is seeking SFC support, but the SFC does not appear inclined to support. I am thinking specifically again of coal water fuels and also low-Btu gas.

I am told that the state of the art for low-Btu gas is at a critical threshold... Will you reconsider the possibility of supporting low-Btu gas projects?

A.4. I regard low-Btu gasification of coal to be one of several promising ways to use coal cleanly in certain utility and industrial applications, and am pleased that the Department of Energy is likely to include it in their "Clean Coal" program. However, the Board of the Corporation has chosen to focus its coal gasification efforts on the production of medium-Btu gas via pressurized, oxygen-blown gasification, for two principal reasons: medium-Btu gasification, like low-Btu gasification, is a promising option for the large-scale, clean use of coal in electric utility and industrial applications; and medium-Btu gasification, unlike low-Btu gasification, has the potential to use coal to produce substitutes for oil and natural gas in the nation's transportation and pipeline systems. With limited funds available, the Board must assist those technologies that have the most potential for giving the nation the synthetic fuels capability it needs, and has decided that medium-Btu gas has more potential than low-Btu gas at this time. Of course, I and the other Board members would be willing to reconsider our views on low-Btu gasification if there is new information available.

Q.5. Senator Johnston: I have reviewed the SFC's Statement of Objectives and Principles, Business Plan and draft Comprehensive Strategy, and overall I find them well thought out and reasonable. However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content, will play in the SFC's program. I would appreciate your comments.

A.5 As a member of the Corporation Board and as a former Congressman from Illinois, I regard eastern coal as one of the nation's most important energy resources, with great potential as a feedstock for

synthetic fuels production. The only two projects the Corporation has assisted so far use technologies that are well-suited to the gasification of eastern coal. The Business Plan gives priority to several other technologies for the gasification of eastern coal, and a solicitation for these will be issued soon. I am disappointed that more has not been done with eastern coal to date. But I know that the Board gives high priority to eastern coal projects; and I am confident, based on discussions we have had with potential sponsors, that we will be able to develop some sound, cost-effective projects using eastern coal soon.

Q.6. Senator Johnston: A Vice President of Illinois Power Company, Mr. Womeldorff, has submitted testimony for the hearing which, while it supports the SFC program and your nomination, poses a question that I believe warrants an answer.

Mr. Womeldorff states that he is "very disappointed that the SFC Board of Directors, including those members before this Committee today, has not recognized that technologies which Illinois Power and many other utilities feel are most practical for utility use, close to commercial application and more adaptable to some coal burning utility systems are worthy of consideration by the SFC... [Low-Btu gasification systems] offer the quickest and most satisfactory means, from our point of view, of bringing high sulfur coal back into the national energy picture in an environmentally acceptable way."

He goes on to point out that utilities from Maryland to Oklahoma have financially supported development of low-Btu gasification. If Mr. Womeldorff is right about your position on low-Btu gasification, why have you rejected his argument?

A.6. Mr. Womeldorff is correct that the Corporation's Business Plan does not contemplate support for low-Btu coal gasification. And I can understand that, from the point of view of a utility executive, low-Btu gasification may be the "quickest and most satisfactory means" of using high-sulfur coal in some coal-burning utility systems -- that is why the Department of Energy, which has the responsibility for demonstrating ways to utilize coal cleanly, includes low-Btu gasification in its program. However, as discussed in A.4 above, the Corporation Board must make judgments about which technologies have

the best potential to give the nation a capability to produce large quantities of synthetic fuels, as substitutes for oil and natural gas; and, in the judgment of the Board and of many independent experts, low-Btu gasification is not as promising as other technologies, particularly medium-Btu gasification, for this purpose.

Q.7. Senator McClure: At the last Board meeting, you suggested that before you could vote on Great Plains you would require concurrence from the Secretary of Energy and the Secretary of the Treasury, and possibly OMB.

Q.7.a. Would you explain your position?

A.7.a. The Corporation is considering providing price supports to Great Plains only because the project cannot repay the loan made by the U.S. Treasury (through the Federal Financing Bank) and guaranteed by the Department of Energy. I have said that, before I can vote on the proposed assistance agreement, I must be assured that all options for dealing with this problem have been fully considered and analyzed, and that Corporation price supports are, indeed, the best option from the point of view of the taxpayers. Because Energy and Treasury are already involved with Great Plains, and because OMB is in a position to consider the overall position of the government, I suggested that the Corporation management ask these agencies for their analyses of options.

Q.7.b. Do you consider OMB concurrence is required for Board action on Great Plains or any other project?

A.7.b. I have neither asked for nor require the "concurrence" of any other agency, for Great Plains or for any other action the Board may take.

Q.7.c. The Energy Security Act established an advisory committee for SFC consultation with the Executive Branch. Why did you advocate direct correspondence with Department of the Treasury and OMB, rather than use of such advisory committee?

A.7.c The Advisory Committee, by statute, advises on solicitations and provides other technical assistance as requested; it has no role in advising the Board on individual projects. As explained in A.7.a above, I suggested that Treasury, Energy and OMB provide the Board with specific analyses on the Great Plains project, because these agencies have particular knowledge and responsibilities concerning this specific project.

Q.7.d. Does this indicate that the SFC will pursue a policy of seeking prior Administration clearance before acting on applications for financial assistance?

A.7.d. The Corporation Board does not intend to seek Administration clearance before acting on applications for financial assistance.

Q.8. Senator Domenici: As you have noted in your testimony, one of the most promising markets that exists today and will exist in the near future is the utility market... However, I am surprised and disappointed that the SFC has not addressed itself to... the production and combustion of low-BTU gas from coal. It is my understanding utilities see significant economic, technical and environmental advantages in low-BTU gas systems... Until now, the SFC has ignored the attractiveness of these technologies in the marketplace. I believe that this is a mistake.

Could you comment? Do you foresee a solicitation for low-BTU technologies for industrial applications?

A.8. As indicated in A.4 and A.6 above, I regard low-Btu gasification of coal to be one of several promising ways to use coal cleanly in certain utility and industrial applications, and am pleased that the Department of Energy is likely to include it in their "Clean Coal" program. However, the Board has chosen to focus its coal gasification efforts on the production of medium-Btu gas via pressurized, oxygen-blown gasification, which is also of interest to utilities and industry. With limited funds available, the Board must assist those technologies that have the most potential for giving the nation the synthetic fuels capability it needs. In the judgment of the Board and most independent experts, medium-Btu gasification has much more

potential than does low-Btu gasification as a source of synthetic fuels, and accordingly is given priority attention in our program. I do not anticipate that the Board will issue a solicitation for low-Btu gas for industrial applications.

Q.9. Senator Johnston: The Phase I Business Plan describes Coal-Water Slurries as being a technology upon which the Board "is still considering how best to proceed." The plan says there are significant and unique market obstacles to the commercial application of coal-water fuel technology in utilities and the Corporation is said to be looking for "appropriate innovative ways to use its authorities here." What is the problem here? Is it a technical problem, a market problem or what?

A.9. Coal-water fuels are potentially a substitute for heavy fuel oil or for other ways of burning coal in certain special situations in electric utilities. The technology is not difficult, but has not been demonstrated at utility scale for the extended periods that would allow the relative economics to be determined. With current oil prices and the uncertainty about relative economics, there is little incentive for utilities to undertake the investments necessary to convert their facilities to coal-water fuels so that some operating experience can be obtained. However, several potential vendors of these fuels are working actively to assist utilities with such conversions and demonstrations; some of these vendors have informed us that Corporation subsidies are unnecessary and would interfere with their efforts to introduce this technology in the normal commercial manner. It is my view, speaking as only one Director, that coal-water fuels are not like other synthetic fuels in technological complexity, required size of investment, or time-scale, and hence are likely to be introduced into the market in a timely way when the price is right, without requiring Corporation involvement. However, the Board is continuing to monitor developments in this area, and if we become convinced that the Corporation can be helpful without interfering with the efforts of the private sector, we will take the appropriate action.

Q.10-11. Senator Johnston: The Phase I Business Plan says that the Corporation will give some preference within the coal program to projects that include production of liquid fuels, but the plan also says that the emphasis will be on assuring that satisfactory technology is in hand to gasify under pressure, leaving it to the market to decide the type of product produced. Are you saying that all other things being equal, if two projects use the same gasification process but one converts the gas to liquids, that you will fund the one producing liquids? Are you sure that will be enough incentive to assure that the liquid products technology will be satisfactorily developed?

A.10-11. In my view, the energy problem in the long run is really a problem of liquid fuels. However, at the present time, the most promising route to producing liquid fuels from coal involves the pressurized gasification of coal followed by catalytic synthesis of the desired liquid fuels. The gasification is the most difficult and critical step in this process, with the down-stream conversion of the gas into liquids (or pipeline quality gas, or chemicals) being relatively easy and well-proven. Under current conditions, the most economical way to obtain commercial experience with gasification is in some special utility and industrial applications that do not involve production of liquid fuels. If two projects are available that provide equivalent experience with gasification, but one involves the production of liquid fuels, the Board would give preference to the project producing liquids. I am not certain that this incentive will result in projects producing liquid fuels; but it is my view that, under current market and technological conditions, this approach is the most cost-effective way to begin developing the synthetic fuels capability the nation needs.

Q.12. Senator Johnston: How do you go about determining what is the smallest plant that is commercial scale for a given technology?

A.12. In the commercial development of process technologies similar to synthetic fuels technologies, there are accepted ideas about the amount of scale-up that can be attempted at each step without undue technical risks -- for example, solids handling processes should be

scaled up slowly, while fluidized bed reactors can be scaled up in larger steps. And there are certain principles that determine when a key piece of process equipment is ~~as large as it is~~ large enough to be considered "commercial" -- for example, when it can be matched with off-the-shelf commercial equipment used elsewhere in the process train. The Board will make judgments in each case about how large a project must be to utilize, in the critical steps in the process (e.g., the gasifier in a coal project, the retort in a shale oil project), equipment that is large enough to be incorporated in commercial projects, without involving undue scale-up risks.

Q.13. Senator Hatch: The Energy Security Act specifically recognizes that government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past three years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

A.13. Absolutely. In fact, it is now more important than ever that the Corporation continue its efforts, although in a more deliberate and measured way than contemplated in 1980. Synthetic fuels are an important option or "insurance policy" for the nation, that require long lead-times and continuity to develop. However, the energy industry is inherently cyclical, with periods of shortage, high prices and expansion followed by periods of "glut", declining prices and retrenchment. It is important that the public sector act to smooth this cycle, by maintaining during calm times the long-term development activities that will allow the nation to respond more effectively when the next energy "crisis" arises.

Q.14. Senator Hatch: I would assume that declining oil prices have affected the level of supports necessary for any or all of the projects with existing letters of intent in order for them to remain viable. How is the Corporation addressing this issue?

Q.14.a. Will these projects be economically unviable if no adjustments are made?

A.14.a. Declining oil prices have, indeed, affected the outlook for the projects with existing letters of intent. Two of these projects have been cancelled by their sponsors, and most of the others have indicated that the original project cannot now be undertaken with the level of assistance originally contemplated in the letter of intent.

Q.14.b-c. Did the need for upward adjustment factor into the Board's decision to defer action on the Seep Ridge Oil Shale Project for three months? Did your staff find these increased costs justified given current market conditions?

A.14.b-c. The need for upward adjustment in assistance was one of the factors in the Board's decision to defer action on the Seep Ridge Oil Shale Project. However, in the Seep Ridge case, cost increases were more important than declining prices in increasing the amount of assistance required. While these cost increases have good explanations, they do raise the question whether the project is still worth doing at the higher cost. The Board decided to defer action on the project so that we and the sponsor can explore ways of increasing its economic viability.

Q.15. Senator Hatch: The Energy Security Act established a goal of achieving a synthetic fuel production capability equivalent to at least 500,000 barrels per day (crude oil) by 1987 and 2,000,000 barrels a day by 1992 from domestic resources. Obviously, a series of events have stymied this progress.

a. What are your production goals for 1987 given today's current situation?

b. How soon do you intend to fund projects in order to meet these goals?

c. Will you fund projects individually, or act on them collectively?

A.15.a-c. The Energy Security Act establishes production goals that, in the judgment of the Board, cannot be met under current conditions. The Board has not set its own production goals for 1987 or for any other year, but has established the objective of developing knowledge of and experience with commercial technology, so that the nation can develop a large industry if and when this becomes desirable. The

Board is working with sponsors to develop the kinds of projects necessary to advance this objective in a cost-effective way, and will act on each of them individually as soon as each is ready.

Q.16. Senator Hatch: Section 131 of the Energy Security Act indicates that preference whall be give to those proposals which represent the least commitment of financial assistance from the Corporation.

a. Using current data and projections, which of the projects with letters of intent requires the lowest financial commitment from the Corporation?

b. Which project has the lowest estimated cost per barrel?

c. Could you rank the projects with letters of intent in terms of necessary assistance and per barrel subsidy?

A.16.a-c. Section 131(b)(2) of the Energy Security Act states that preference shall be given to the project that represents "the least commitment of financial assistance by the Corporation and the lowest unit production cost within a given technological process" (emphasis added). Because the Corporation is considering such diverse processes at widely-varying scales, comparisons of total or unit costs can be misleading. The Board must decide, for each project, whether the resource and process proposed would make a significant contribution to national synthetic fuels capability at a cost that is reasonable in light of the cost and potential of other projects. However, the following table compares the letter of intent projects on several measures of cost.

	Obligation Authority		
Project	Total ($MM)	Per Unit Capacity ($/BOED)	Per Unit Production ($/BOE)
Union Phase II	$2,700	$ 64,000	$ 6.60
Cathedral Bluffs	2,190	144,500	14.20
Great Plains	820	35,500	4.10
Northern Peat	365	119,000	18.30
Seep Ridge	130	130,000	17.80
Forest Hill	60	32,000	3.80

Q.17. Senator Hatch: The Energy Security Act recognizes the production of synthetic fuels has a national defense application and indicates that the Corporation should expedite its initial development.

a. What has the Corporation done in this area?

b. Is it correct that the Air Force has tested and responded favorably to jet fuel produced from oil shale?

A.17.a-b. The Corporation has met many times with the Department of Defense to discuss the role of synthetic fuels in meeting their needs for fuel. Before executing any assistance contract, the Corporation informs DOD of its intentions and requests a written statement from DOD regarding DOD's interest in any product from the project. The Parachute Creek Phase I project, now in start-up, will supply fuels to DOD under contract. And we have had recent discussions with DOD in our efforts to find an economical market for the shale oil that would be produced in several small projects under consideration, particularly Seep Ridge. It is my understanding that the Air Force has tested jet fuel produced from oil shale, found it satisfactory, and would like to conduct more extensive tests if they can find a secure source of shale oil in adequate quantities.

Q.18. Senator Hatch: Do you agree with the goals of the Energy Security Act?

a. Are there any changes to that Act that you would like to see?

A.18.a. I am committed to the basic objectives of the Corporation as expressed in the Energy Security Act, which relate to the need to establish a national capability to produce synthetic fuels economically, cleanly and on a large scale. I think that some of the specific goals set in the Act, particularly the national production goals, are not reasonably achievable under current conditions, and that other, more operational objectives must be established -- this is what the Board has done in the Statement of Objectives and Principles and the Business Plan. However, I believe there is sufficient

flexibility under the Act for the Board to implement a sound program under current conditions and would not recommend changes to the Act at this time.

b. Do you believe that projects in coal, tar sands, shale and heavy oil should be included in the SFC program?

c. Do you believe any particular area is more deserving than another? If so, which?

d. Would you exclude any of these areas from funding?

A.18.b-d. I believe that coal, oil shale and tar sands/heavy oil are all potentially important sources of synthetic fuels that should be included in the Corporation's program. No one of these resources is more deserving than any other; each should be developed in a cost-effective manner, taking into account the differences in resource availability, required size of project, need for government assistance, etc. I would not exclude any of these resources from funding, if good projects can be developed in partnership with industry.

Q.19. Senator Hatch: Under the definitions of the Energy Security Act, the term Synthetic Fuel is described as any solid, liquid or gas or combination which can be used as a substitute for Petroleum or Natural Gas, but are specifically listed as: coal, shale, tar sands, and heavy oils. Does the Corporation intend to fund projects in each of these categories?

a. When do you anticipate the Board will take positive action in actually funding a project? Can we expect action in the next three months? Six months? Year?

b. Do you anticipate that projects will be funded individually or in packages? (Oil Shale Projects, Tar Sands Projects, etc.)

A.19.a-b. The Corporation expects to fund projects using all three of the principal synthetic fuels resources listed in the Act -- coal, oil shale, tar sands/heavy oil. However, for any resource, a candidate project must meet the Corporation's strength criteria and must have

the potential for increasing the national capability to produce synthetic fuel in a cost-effective way. Projects will be evaluated both on their individual merits and on their relationship to others in the program, and I anticipate that funding decisions will be made individually. In light of the changed outlook for synthetic fuels' economics, projects are being reconfigured and renegotiated -- a process that will take three to six months in most cases. I am hopeful that the Corporation will be able to reach agreement in principle with several significant projects within that time-frame, and final agreements as soon thereafter as possible.

ANSWERS SUBMITTED BY ERIC REICHL

Questions for Each Nominee

Submitted by Senator Warner

Q.1.: Last year when Mr. Noble appeared before this committee he assured us that 1984 was going to be the year of coal. Now it's 1985, and I want to know whatever happened to the year of coal.

A.1.: Coal will receive major attention in 1985, in line with our Business Plan and the Draft Comprehensive Strategy.

Q.2.: I have expressed to you and other members of the board my very strong interest in the Synthetic Fuels Corporation's supporting coal-water projects. I stand by that support. What is the status of the Corporation's Coal Water Solicitation?

A.2.: I still consider coal-water an important synfuel. It will be reconsidered later to determine if the private sector has actually moved into this area.

Q.3.: I commend you for the development of your Phase I Business Plan which specifies the kinds of projects you intend to fund. Where are you going to get the projects? In other words, are you convinced the private sector is interested in the same kinds of projects you have identified as important national priorities?

A.3.: Yes. Virtually all projects identified in the Comprehensive Strategy are backed up by discussion or negotiations with specific sponsors.

Q.4.: I am also concerned that there are certain other very promising technologies in which the private sector has an interest and is seeking SFC support, but the SFC does not appear inclined to support. I am thinking specifically again of coal water fuels and also low-Btu gas.

I am told that the state of the art for low-Btu gas is at a critical threshold needing only a few short years of federal support to move it into the marketplace in late 1980's for dimension of financial support is small in comparison to both new "greenfield" medium-Btu gas project costs and the benefits to be derived by utility customers.

Q4 Cont: I am concerned that in this period of a temporary glut of crude oil, that low-Btu coal gasification as an option for the utility industry could be significantly delayed because of the SFC decision to exclude this technology when we know a market will exist and for which we likewise know there are precious few options available. I urge the SFC to reconsider in their business plan a low-Btu gas option because I believe we must not ignore a significant coal utilization technology that can benefit electric ratepayers while at the same time contribute materially to the cleaner burning of coal. Will you reconsider the possibility of supporting low Btu gas projects?

A.4.: Low-Btu gas is not useful in the production of any synthetics. It can be a preferred way to burn coal in utility or industrial furnace or a means to use coal cleanly. This art is well established and novel. Air gasifiers are under development (Kiln-gas).

This technology is included in the clean-coal use technologies which DOE is supporting and which should be further supported by DOE (to demonstration) if and when Congress passes legislation towards this end. (See also: Clean Coal Use Technology. Report of Energy Research Advisory Board of DOE. Section on low-Btu gas from this report is attached).* (Attachment)

Questions for Each Nominee

Submitted by Senator Johnston

Q.5.: I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable.

However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in Btu value and sulphur content, will play in the SFC's program.

I would appreciate your comments.

A.5.: Eastern coal is indeed one of the key resources for synfuels. There are 3 projects under discussion (and in the Comprehensive Strategy) converting eastern coal in 3 different gasifiers.

Q.6: A Vice President of Illinois Power Company, Mr. Womeldorff, has submitted testimony for the hearing which, while it supports the SFC program and your nomination, poses a question that I believe warrants an answer.

Mr. Womeldorff states that he is "very disappointed that the SFC Board of Directors, including those members before this Committee today, has not recognized that technologies which Illinois Power and many other utilities feel are most practical for utility use, close to commercial application and more adaptable to some coal burning utility systems are worthy of consideration by the SFC. In the newly announced business plan and in the draft comprehensive strategy, I was unable to find any indication that the SFC has expressed any interest in considering low-Btu gasification systems. It is these systems which offer the quickest and most satisfactory means, from our point of view, of bringing high sulfur coal back into the national energy picture in an environmentally acceptable way."

He goes on to point out that utilities from Maryland to Oklahoma have financially supported development of low-Btu gasification. If Mr. Womeldorff is right about your position on low-Btu gasification, why have you rejected his argument?

A.6.: See item 4 above.

Questions for Each Nominee

Submitted on Behalf of Senator Hatch

Issue: Role of SFC and Need to Increase Support for Projects Given Current Oil Prices

Q.7.: The Energy Security Act specifically recognizes that government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past three years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

A.7.: Yes indeed. The U.S. R&D program (including SFC) must be viewed as long-range insurance. It takes 5-10 years to complete such a program which cannot and should not be disturbed to follow the year by year changes in oil prices.

Q.8.: I would assume that declining oil prices have affected the level of supports necessary for any or all of the projects with existing letters of intent in order for them to remain viable. How is the Corporation addressing this issue?

8-a.: Will these projects be economically unviable if no adjustments are made?

A.8-a.: No; the adjustments are intended to retain their viability.

Q.8-b.: Did the need for upward adjustment factor into the Board's decision to defer action on the Seep Ridge Oil Shale Project for three months?

A.8-b.: No.

Q.8-c.: Did your staff find these increased costs justified given current market conditions?

A.8-c.: Seep Ridge costs are still under review.

Issue: Production Goals of Corporation

Q.9.: The Energy Security Act established a goal of achieving a synthetic fuels production capability equivalent to at least 500,000 barrels per day (crude oil) by 1987 and 2,000,000 barrels a day by 1992 from domestic resources. Obviously a series of events has stymied this progress.

Q.9-a.: What are your production goals for 1987 given today's current situation?

A.9-a.: There is no "goal" expressed in production. The goal is one of "knowledge": To have proven the technical and environmental viability of a set of Resource/Technology combinations.

Q.9-b.: How soon do you intend to fund projects in order to meet these goals?

A.9-b.: Over the next 12-18 months all available funds should be committed, if the current plan is followed.

Q.9-c.: Will you fund projects individually, or act on them collectively?

A.9-c.: Individually.

Issue: Project Status in Terms of Necessary Assistance From the Corporation

Q.10.: Section 131 of the Energy Security Act indicates that preference shall be given to those proposals which represent the least commitment of financial assistance from the Corporation.

Q.10-a.: Using current data and projections, which of the projects with letters of intent requires the lowest financial commitment from the Corporation?

b.: Which project has the lowest estimated cost per barrel?

c.: Could you rank the projects with letters of intent in terms of necessary assistance and per barrel costs?

A.10a-c: Cost per barrel is not the sole criterion. We will also consider total project cost to reach the desired package of knowledge. However, the indicated cost per barrel from full scale future plants of a given technology will receive careful consideration.

Issue: SFC Involvement With the Defense Department

Q.11.: The Energy Security Act recognizes the production of synthetic fuels has a national defense application and indicates that the Corporation should expedite its initial development.

Q.11-a.: What has the Corporation done in this area?

b.: Is it correct that the Air Force has tested and responded favorably to jet fuel produced from oil shale?

A.11a-b: The potential of any Resource/Technology combination towards supply of DOD needs will be considered. Yes, shale is a potential source of jet fuel, but so is coal.

Issue: Commitment to Goals of the Corporation

Q.12.: Do you agree with the goals of the Energy Security Act?

A.12.: Yes.

Q.12-a.: Are there any changes to that Act that you would like to see?

A.12-a.: Possibly, extension or possible inclusion of less than commercial size plants, particularly related to direct hydrogenation of coal.

Q.12-b.: Do you believe that projects in coal, tar sands, shale and heavy oil should be included in the SFC program?

A.12-b: Yes.

Q.12-c.: Do you believe any particular area is more deserving than another? If so which?

A.12-c.: Coal and shale are the major resources. If funds are cut, these should receive preference.

Q.12-d.: Would you exclude any of these areas from funding?

A.12-d. Not under present circumstances.

Issue: SFC's Intent to Fund Diversity of Projects Anticipated Time Frame for Funding

Q.13.: Under the definitions of the Energy Security Act, the term Synthetic Fuel is described as any solid liquid or gas or combination which can be used as a substitute for Petroleum or Natural Gas, but are specifically listed as: coal, shale, tar sands, and heavy oils. Does the Corporation intend to fund projects in each of these categories?

A.13.: Yes.

Q.13-a.: When do you anticipate the Board will take positive action in actually funding a project? Can we expect action in the next three months? Six months? Year?

A.13-a.: Over the next 12 months (see 9-b. above).

Q.13-b.: Do you anticipate that projects will be funded individually or in packages? (Oil Shale projects, tar sands projects, etc.)

A.13-b.: Individually.

EXCERPT FROM: "A CLEAN COAL USE TECHNOLOGIES" REPORT ON ERAB APPROVED BY ERAB ON 5/1/85

D. - AIRBLOWN GASIFIERS DRAFT 5/1/85

by Wm. McCormick

Gasification of coal as a means to achieve an ultimately clean combustion of this fuel represents one of the oldest chemical processing concepts; it was widely used during the 19th century industrial revolution. Gasification with air results in a BTU value of the gas in the 140-180 BTU/cb.ft. range, usually referred to as lo-BTU gas. With the arrival of tonnage oxygen emphasis has been almost exclusively on new gasifiers using this oxidant, particularly at elevated pressure and these are now the essential centerpiece of virtually every system used to convert coal to synthetic gases or liquids. Synthetics have become a major R&D goal in their own right and are specifically excluded from the present study.

This is not to say that gasification with oxygen under pressure cannot be considered for "clean use of coal"; in fact this configuration was and is being demonstrated in several power plants (Lünen, Coolwater, Plaquemines), broadly speaking, as a source of clean gas for use as fuel or for synthesis, etc.

This study concerns itself with the use of airblown gasifiers as a means to "burn coal in two stages" including removal of the key polluting emissions from the raw gas. Accordingly, the R&D problems associated with this system

can be conveniently considered as they relate to the three steps comprising the system:

1) Gasification
2) Gas clean up
3) Use of Lo-BTU gas.

1) Gasification with Air

In principle all the gas/solid reactors used in gasification can be operated with air, fixed bed, fluid bed, entrained solids, etc. However, in practice entrained solid reactors have been used only with oxygen; historically most airblown reactors have been of the fixed bed type, but fluid beds can also be run with air. Use of high air preheat may open the door to airblown entrained solid gasifiers and recent advances with high temperature gas to gas heat exchangers may be able to help, but no R&D program to this end is under consideration.

As to air gasification in fixed or fluid beds, it is not necessary here to recite the several commercial purveyors of such equipment. Generally the well-known advantages and disadvantages of either, which apply to oxygen blown operation, will also apply to operation with air. Thus the countercurrent fixed bed units are highly efficient, but impose constraints on capacity related to the size of the coal, its tendency to cake and to reactivity. The atmospheric fixed bed version has generally

limited capacity subject to these three properties of the feed coal. The noted countercurrency will also inevitably cause tar to be evolved as the coal first reaches carbonization temperature (700 to 1,000°F); several systems have been proposed and tested which minimize tar yield, or render it innocuous.

In the past these fixed bed reactors have generally been used on specially selected coals, anthracite or coke of lump size and a need exists to obtain valid operating data on other coals in order to broaden the potential market for this equipment. Standardized tests on a fixed bed reactor would be required to compare the major U.S. coal types, bituminous, sub-bituminous, lignite and anthracite and for each certain variables need to be systematically explored, including among others:

a) Coal feed size limit (% fines) for stable operation;

b) Coal feed size ratio (breadth of size range);

c) Effect of degradation on operation.

The information would be required to allow proper procurement of coal for industrial applications, where the market for Lo-BTU gas seems to be concentrated.

For fine coal sizes (which would have to be agglomerated to permit their use in fixed beds) the fluid bed reactor offers a good alternate, notably also because it

can accommodate larger capacity; the Winkler gasifier remains the most demonstrated example, but its performance with air requires improvements, particularly in terms of carbon conversion. Carbon loss through withdrawal from the bed with the ash and through carryover with the product gas ranged from 20 to 40%. Thus operation of fluid bed gasifiers under conditions favoring agglomeration (clinkering) of the ash is now being developed which would greatly reduce carbon loss in the ash. The system has yet to be tested on a commercial scale and DOE may consider support of the airblown, fluid bed, ash agglomerating gasifiers if adequate private sector cofunding is available.

2) Gas Clean-Up

A special R&D opportunity exists in the area of clean-up (desulfurizing) of raw Lo-BTU gas. DOE is actually engaged in this area of gas clean-up with major emphasis on control of alkalis and particulates for use on hot pressurized gas streams (supplying gas to gas turbine power units). In order to help introduction of Lo-BTU gas to a wider industrial market the program would need to give attention also to the problem of H_2S removal from hot, atmospheric pressure gas streams in the range of say 800° to 1,500°F, the exit-temperatures of the various gasifiers.

This subject of gas clean-up, hopefully, at low cost, is probably the most critical need before Lo-BTU gas can be expected to command a wider acceptance.

3) Use of Lo-BTU Gas

The low heating value of this fuel does not permit a wide range distribution by pipeline grid; most installations will be tightly integrated with the final user, where the gas is burned.

This raises the question about combustion technology and particularly the potential problem of de-rating the capacity of the final user's equipment; this is obviously a very site specific matter. There may be no generic R&D program which addresses itself to all situations, but the potential of air preheat for Lo-BTU combustion systems as a means to reduce de-rating, deserves study; particularly since new alloys, etc. have recently been developed which permit use of higher preheat levels. Another, indirect approach involves use of lower cost air separation techniques (membranes, etc.) to produce enriched air for these gasifiers.

4) Solid and Aqueous Wastes

The solid wastes, ash, and waste liquor from gasifiers present different disposal problems from those encountered with direct combustion of coal.

Ashes will tend to contain higher levels of residual carbon and leaching must be tested to assure proper disposal. Obviously the problem is coal- and gasifier-specific. Data related to this must be obtained to permit adoption of the system.

Finally, it is known that almost all gasifiers will in most cases generate waste waters which also need special attention; the exception might be tar-free gasifiers followed by hot gas clean-up. Research will therefore be needed to define liquor treatment. Since Lo-BTU gas systems are likely to be fairly small, the preferred disposal may be by way of municipal systems, but some pre-treatment may be required to allow this method of disposal.

Without definition of a detailed R&D program for the Lo-BTU gas development it is estimated that up to $20 million per year would be required to cover all the key issues, with the program extended over a 5 year period. Obviously much of this money would come from the private sector, but some DOE involvement to serve as lead agency and to contribute seed money would be desirable to assure timely progress.

ANSWERS

TO QUESTIONS DIRECTED TO MR. MACAVOY

AT CONFIRMATION HEARINGS

FOR BOARD OF DIRECTORS, U.S. SYNTHETIC FUELS CORPORATION

May 3, 1985

Q.1. Senator Warner: Last year when Mr. Noble appeared before this committee he assured us that 1984 was going to be the year of coal. Now it's 1985, and I want to know whatever happened to the year of coal.

A.1. During 1984, the Corporation undertook substantial efforts to develop coal projects and did execute an assistance agreement with the Dow Syngas project. However, progress was disappointing, largely because the Corporation did not have a Board in place that could make the judgments and set the new directions necessary in light of the declining economic attractiveness of synthetic fuels projects. Since the new Board has been in place, we have moved forward to define what is necessary and appropriate under current conditions, and have clearly decided that coal is the principal area for action in Phase I; this is demonstrated by the number of coal resource-technology categories given priority in the Business Plan. We have had discussions with sponsoring groups interested in working with us to develop coal projects that will implement the Business Plan in a cost-effective way, and I am confident that we will be able to reach agreement with several of these groups.

Q.2. Senator Warner: I have expressed to you and other members of the board my very strong interest in the Synthetic Fuels Corporation's supporting coal-water projects. I stand by that support. What is the status of the Corporation's Coal Water Solicitation?

A.2. I have not voted on issues involving coal-water slurries. However, the new Board decided that industrial use of coal-water fuels is being advanced adequately by the private sector and hence Corporation involvement would be neither necessary nor appropriate. In regard to utility use of coal-water fuels, suppliers of coal-water

fuels who are trying to enter the market without Corporation subsidies have told us that our involvement is not necessary and, in fact, would interfere with their efforts to establish this important technology in the normal commercial manner. It is my understanding that the solicitation is now inactive.

Q.3. Senator Warner: I commend you for the development of your Phase I Business Plan which specifies the kinds of projects you intend to fund. Where are you going to get the projects? In other words, are you convinced the private sector is interested in the same kinds of projects you have identified as important national priorities?

A.3. My colleagues on the Board who have been more actively involved than I tell me that they have discussed with potential sponsors and others the possibility of developing projects that would implement the Business Plan in a cost-effective manner and have gotten generally encouraging responses; this is consistent with the more-limited contacts I have had with potential sponsors. The kinds of projects the Board thinks are appropriate are the kinds of projects that most knowledgeable people in the private sector acknowledge to be appropriate at this stage in the development of the industry, even though they are not necessarily what some sponsors would most like us to subsidize. With leadership on the part of the Corporation, I think will be able to develop, in partnership with industry, a good set of projects to implement the Phase I Business Plan.

Q.4. Senator Warner: I am also concerned that there are certain other very promising technologies in which the private sector has an interest and is seeking SFC support, but the SFC does not appear inclined to support. I am thinking specifically again of coal water fuels and also low-Btu gas.

I am told that the state of the art for low-Btu gas is at a critical threshold... Will you reconsider the possibility of supporting low-Btu gas projects?

A.4. Low-Btu gasification of coal is one of several promising ways to use coal cleanly in certain utility and industrial applications. However, the Board of the Corporation has chosen to focus its coal

gasification efforts on the production of medium-Btu gas which, like low-Btu gasification, is a promising option for the large-scale, clean use of coal in electric utility and industrial applications and, unlike low-Btu gasification, has the potential to use coal to produce substitutes for oil and natural gas in the nation's transportation and pipeline systems. With limited funds available, the Board must assist those technologies that have the most potential for giving the nation the synthetic fuels capability it needs, and has decided that medium-Btu gas has more potential than low-Btu gas at this time.

Q.5. Senator Johnston: I have reviewed the SFC's Statement of Objectives and Principles, Business Plan and draft Comprehensive Strategy, and overall I find them well thought out and reasonable. However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content, will play in the SFC's program. I would appreciate your comments.

A.5 Eastern coal is clearly one of the nation's most important energy resources, with great potential as a feedstock for synthetic fuel production. The only two projects the Corporation has assisted so far use technologies that are well-suited to the gasification of eastern coal. The Business Plan gives priority to several other technologies for the gasification of eastern coal, and a solicitation for these will be issued soon. The Board gives high priority to eastern coal projects; and I am confident, based on discussions we have had with potential sponsors, that we will be able to develop some sound, cost-effective projects using eastern coal soon.

Q.6. Senator Johnston: A Vice President of Illinois Power Company, Mr. Womeldorff, has submitted testimony for the hearing which, while it supports the SFC program and your nomination, poses a question that I believe warrants an answer.

Mr. Womeldorff states that he is "very disappointed that the SFC Board of Directors, including those members before this Committee today, has not recognized that technologies which Illinois Power and many other utilities feel are most practical for utility use, close to commercial application and more adaptable to some coal burning utility systems

are worthy of consideration by the SPC... [Low-Btu gasification systems] offer the quickest and most satisfactory means, from our point of view, of bringing high sulfur coal back into the national energy picture in an environmentally acceptable way."

He goes on to point out that utilities from Maryland to Oklahoma have financially supported development of low-Btu gasification. If Mr. Womeldorff is right about your position on low-Btu gasification, why have you rejected his argument?

A.6. See A.4 above.

Questions for Mr. MacAvoy

Submitted by Senator Johnston

On page 4 of your statement you say that, "In any event, given the experience in reactor development, it is more appropriate that the full scale plant be undertaken by the first commercial enterprise. Following the Business Plan closely and cutting back to projects one-third the size previously envisioned would result in SFC outlays less than half of the amount authorized."

Q.7.: Does the Business Plan itself call for cutting back to projects one-third as large or are you simply advocating that projects be one-third as large as originally envisioned? (The plan seems to call for projects affording "commercial scale experience.")

A.7.: The Business Plan does not call for cutting back projects to any specific size as compared to the scale submitted by the sponsor. My position is that no project should be cut back to below "commercial scale." But, in contrast to fifty thousand barrels per day projects, it is possible to obtain commercial scale at ten thousand barrels per day or less. The ten thousand barrels per day project should be undertaken in preference to the fifty thousand barrels per day projects, even though the per barrel costs are higher, because the total value of the learning for future development is roughly or approximately the same.

Q.8.: Shouldn't the size of the project be dictated by the specific plant size necessary to achieve commercial experience with a particular technology?

A.8.: The answer to this question is that the size of the project should be dictated by the minimum plant size necessary to achieve commercial experience with a specific technology.

Q.9. Senator Hatch: The Energy Security Act specifically recognizes that government assistance will be necessary in order to facilitate the development of synthetic fuels. Given the fact that oil prices have fallen significantly over the past three years, do you still believe the Synthetic Fuels Corporation has a legitimate role in developing alternative energy resources?

A.9: Yes. It is important that the Corporation continue its efforts, although in a more limited and selective way than contemplated in 1980. Synthetic fuels are an important option or "insurance policy" for the nation, that require long lead-times and continuity to develop. By investing carefully now, the nation can (probably) generate benefits in the future that have a present, discounted, expected value that is greater than the present value of the cost of the investment.

Q.10. Senator Hatch: I would assume that declining oil prices have affected the level of supports necessary for any or all of the projects with existing letters of intent in order for them to remain viable. How is the Corporation addressing this issue?

Q.10.a. Will these projects be economically unviable if no adjustments are made?

A.10.a. Declining oil prices have, indeed, affected the outlook for the projects with existing letters of intent. Two of these projects have been cancelled by their sponsors, and most of the others have indicated that the original project cannot now be undertaken with the level of assistance originally contemplated in the letter of intent.

Q.10.b-c. Did the need for upward adjustment factor into the Board's decision to defer action on the Seep Ridge Oil Shale Project for three months? Did your staff find these increased costs justified given current market conditions?

A.10.b-c. The need for upward adjustment in assistance was one of the factors in the Board's decision to defer action on the Seep Ridge Oil Shale Project. However, in the Seep Ridge case, cost increases were more important than declining prices in increasing the amount of assistance required. While these cost increases have good explanations, they do raise the question whether the project is still worth doing at the higher cost. The Board decided to defer action on the project so that the Corporation and the sponsor can explore ways of increasing its economic viability.

Q.11. Senator Hatch: The Energy Security Act established a goal of achieving a synthetic fuel production capability equivalent to at least 500,000 barrels per day (crude oil) by 1987 and 2,000,000 barrels a day by 1992 from domestic resources. Obviously, a series of events have stymied this progress.

a. What are your production goals for 1987 given today's current situation?

b. How soon do you intend to fund projects in order to meet these goals?

c. Will you fund projects individually, or act on them collectively?

A.11.a-c. The Energy Security Act establishes production goals that, in the judgment of the Board, cannot be met under current conditions. The Board has not set its own production goals for 1987 or for any other year, but has established the objective of developing knowledge of and experience with commercial technology, so that the nation can develop a large industry if and when this becomes desirable. The Board is working with sponsors to develop the kinds of projects necessary to advance this objective in a cost-effective way, and will act on each of them individually as soon as each is ready.

Q.12. Senator Hatch: Section 131 of the Energy Security Act indicates that preference whall be give to those proposals which represent the least commitment of financial assistance from the Corporation.

a. Using current data and projections, which of the projects with letters of intent requires the lowest financial commitment from the Corporation?

b. Which project has the lowest estimated cost per barrel?

c. Could you rank the projects with letters of intent in terms of necessary assistance and per barrel subsidy?

A.12.a-c. Section 131(b)(2) of the Energy Security Act states that preference shall be given to the project that represents "the least commitment of financial assistance by the Corporation and the lowest unit production cost within a given technological process" (emphasis added). Because the Corporation is considering such diverse processes at widely-varying scales, comparisons of total or unit costs can be misleading. The Board must decide, for each project, whether the resource and process proposed would make a significant contribution to national synthetic fuels capability, soon enough and with high enough probability, that the discounted value of the expected benefits is likely to exceed the discounted value of the costs.

Q.13. Senator Hatch: The Energy Security Act recognizes the production of synthetic fuels has a national defense application and indicates that the Corporation should expedite its initial development.

a. What has the Corporation done in this area?

b. Is it correct that the Air Force has tested and responded favorably to jet fuel produced from oil shale?

A.13.a-b. The Corporation has met many times with the Department of Defense to discuss the role of synthetic fuels in meeting their needs for fuel. Before executing any assistance contract, the Corporation informs DOD of its intentions and requests a written statement from DOD regarding DOD's interest in any product from the project. The

Parachute Creek Phase I project, now in start-up, will supply fuels to DOD under contract. And representatives of the Corporation have had recent discussions with DOD in our efforts to find an economical market for the shale oil that would be produced in several small projects under consideration, particularly Seep Ridge. It is my understanding that the Air Force has tested jet fuel produced from oil shale, found it satisfactory, and would like to conduct more extensive tests if they can find a secure source of shale oil in adequate quantities.

Q.14. Senator Hatch: Do you agree with the goals of the Energy Security Act?

a. Are there any changes to that Act that you would like to see?

A.14.a. I am committed to the basic objectives of the Corporation as expressed in the Energy Security Act, which relate to the need to establish a national capability to produce synthetic fuels economically, cleanly and on a large scale. I think that some of the specific goals set in the Act, particularly the national production goals, are not reasonably achievable under current conditions, and that other, more operational objectives must be established -- this is what the Board has done in the Statement of Objectives and Principles and the Business Plan. However, I believe there is sufficient flexibility under the Act for the Board to implement a sound program under current conditions and would not recommend changes to the Act at this time.

b. Do you believe that projects in coal, tar sands, shale and heavy oil should be included in the SFC program?

c. Do you believe any particular area is more deserving than another? If so, which?

d. Would you exclude any of these areas from funding?

A.14.b-d. I believe that coal, oil shale and tar sands/heavy oil are all potentially important sources of synthetic fuels that should be

included in the Corporation's program. No one of these resources is more deserving than any other; each should be developed in a cost-effective manner, taking into account the differences in resource availability, required size of project, need for government assistance, etc. I would not exclude any of these resources from funding, if good projects can be developed in partnership with industry.

Q.15. Senator Hatch: Under the definitions of the Energy Security Act, the term Synthetic Fuel is described as any solid, liquid or gas or combination which can be used as a substitute for Petroleum or Natural Gas, but are specifically listed as: coal, shale, tar sands, and heavy oils. Does the Corporation intend to fund projects in each of these categories?

a. When do you anticipate the Board will take positive action in actually funding a project? Can we expect action in the next three months? Six months? Year?

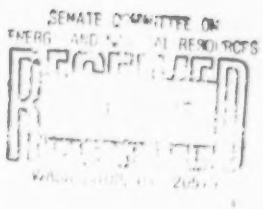
b. Do you anticipate that projects will be funded individually or in packages? (Oil Shale Projects, Tar Sands Projects, etc.)

A.15.a-b. The Corporation expects to fund projects using all three of the principal synthetic fuels resources listed in the Act -- coal, oil shale, tar sands/heavy oil. However, for any resource, a candidate project must meet the Corporation's strength criteria and must have the potential for increasing the national capability to produce synthetic fuel in a cost-effective way; before I will vote to approve any project, I will want to see evidence that its social benefits are likely to exceed its social costs. Projects will be evaluated both on their individual merits and on their relationship to others in the program, and I anticipate that funding decisions will be made individually. In light of the changed outlook for synthetic fuels economics, projects are being reconfigured and renegotiated -- a process that will take three to six months in most cases. I am hopeful that the Corporation will be able to reach agreement in principle with several significant projects within that time-frame, and final agreements as soon thereafter as possible.

Official Committee File

United States
Synthetic Fuels Corporation

June 3, 1985



Mr. Richard Grundy
Professional Staff Member
Senate Committee on Energy
and Natural Resources
Room 358
Dirksen Senate Office Building
Washington, DC 20510

Dear Richard:

Attached are responses to the questions submitted by Senator Ford to the nominees to the Board of Directors of the U.S. Synthetic Fuels Corporation -- Tom Corcoran, Eric Reichl and Paul MacAvoy.

Sincerely yours,

Don Webster
Vice President
External Relations

Attachments

ANSWERS

TO QUESTIONS DIRECTED TO MR. CORCORAN

BY SENATOR FORD

AT CONFIRMATION HEARINGS

FOR BOARD OF DIRECTORS, U.S. SYNTHETIC FUELS CORPORATION

May 3, 1985

Q.1 What priority is there for low-BTU gasification in your Phase I Business Plan? (Some have said that you are not interested in that technology.)

A.1. I regard low-Btu gasification of coal to be one of several promising ways to use coal cleanly in certain utility and industrial applications, and am pleased that the Department of Energy is likely to include it in their "Clean Coal" program. However, the Board of the Corporation has chosen to focus its coal gasification efforts on the production of medium-Btu gas via pressurized, oxygen-blown gasification, for two principal reasons: medium-Btu gasification, like low-Btu gasification, is a promising option for the large-scale, clean use of coal in electric utility and industrial applications; and medium-Btu gasification, unlike low-Btu gasification, has the potential to use coal to produce substitutes for oil and natural gas in the nation's transportation and pipeline systems. With limited funds available, the Board must assist those technologies that have the most potential for giving the nation the synthetic fuels capability it needs, and has decided that medium-Btu gas has more potential than low-Btu gas at this time. Of course, I and the other Board members would be willing to reconsider our views on low-Btu gasification if there is new information available.

Q.2. The Phase I Business Plan describes Coal-Water Slurries as being a technology upon which the Board "is still considering how best to proceed." The plan says there are significant and unique market obstacles to the commercial application of coal-water fuel technology in utilities and the Corporation is said to be looking for "appropriate innovative ways to use its authorities here." What is the problem here? Is it a technical problem, a market problem or what?

A.2. Coal-water fuels are potentially a substitute for heavy fuel oil or for other ways of burning coal in certain special situations in electric utilities. The technology is not difficult, but has not been demonstrated at utility scale for the extended periods that would allow the relative economics to be determined. With current oil prices and the uncertainty about relative economics, there is little incentive for utilities to undertake the investments necessary to convert their facilities to coal-water

fuels so that some operating experience can be obtained. However, several potential vendors of these fuels are working actively to assist utilities with such conversions and demonstrations; some of these vendors have informed us that Corporation subsidies are unnecessary and would interfere with their efforts to introduce this technology in the normal commercial manner. It is my view, speaking as only one Director, that coal-water fuels are not like other synthetic fuels in technological complexity, required size of investment, or time-scale, and hence are likely to be introduced into the market in a timely way when the price is right, without requiring Corporation involvement. However, the Board is continuing to monitor developments in this area, and if we become convinced that the Corporation can be helpful without interfering with the efforts of the private sector, we will take the appropriate action.

Q.3. Who asked you to serve as a member of the Board? Was there ever any understanding or commitment that you entered into with either members of the White House staff or OMB with regard to your role as a director of the SFC?

A.3. In a conversation with OMB Director David Stockman, he asked if I would be willing to serve as a Member of the SFC Board of Directors, and I responded in the affirmative. There was not then, nor has there ever been and "understanding or commitment that [I] entered into with either members of the White House staff or OMB with regard to [my] role as a director of the SFC."

Q.4. The Phase I Business Plan says that the Corporation will give some preference within the coal program to projects that include production of liquid fuels, but the plan also says that the emphasis will be on assuring that satisfactory technology is in hand to gasify under pressure, leaving it to the market to decide the type of product produced.

A.4. In my view, the energy problem in the long run is really a problem of liquid fuels. However, at the present time, the most promising route to producing liquid fuels from coal involves the pressurized gasification of coal followed by catalytic synthesis of the desired liquid fuels. The gasification is the most difficult and critical step in this process, with the down-stream conversion of the gas into liquids (or pipeline quality gas, or chemicals) being relatively easy and well-proven. Under current conditions, the most economical way to obtain commercial experience with gasification is in some special utility and industrial applications that do not involve production of liquid fuels. If two projects are available that provide equivalent experience with gasification, but one involves the production of

liquid fuels, the Board would give preference to the project producing liquids. I am not certain that this incentive will result in projects producing liquid fuels; but it is my view that, under current market and technological conditions, this approach is the most cost-effective way to begin developing the synthetic fuels capability the nation needs.

Q.5. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan and draft Comprehensive Strategy, and overall I find them well thought out and reasonable. However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in BTU value and sulphur content, will play in the SFC's program. I would appreciate your comments.

A.5 As a member of the Corporation Board and as a former Congressman from Illinois, I regard eastern coal as one of the nation's most important energy resources, with great potential as a feedstock for synthetic fuels production. The only two projects the Corporation has assisted so far use technologies that are well-suited to the gasification of eastern coal. The Business Plan gives priority to several other technologies for the gasification of eastern coal, and a solicitation for these will be issued soon. I am disappointed that more has not been done with eastern coal to date. But I know that the Board gives high priority to eastern coal projects; and I am confident, based on discussions we have had with potential sponsors, that we will be able to develop some sound, cost-effective projects using eastern coal soon.

Answers of Eric H. Reichl to Questions of Senator Wendal Ford
in Connection with His Nomination as Member of the SFC Board

Re Question 1 (Sen. Ford to Reichl): There was a major discrepancy between the SFC-goals of the original ESA in terms of capacity, timing and cost of the intended program and the rapid changes in oil economics which occurred during 1981-82.

In contrast, the worldwide oil supply/demand balance is now much closer to equilibrium, mainly a result of major production cutbacks by OPEC. Also the U.S. has built up SPRO for dealing with short duration upsets. However, it is now also understood, that in spite of good results from conservation, etc. the U.S. is now, and will remain a major net importer of oil; 45% imports by 2000 seem unavoidable. Thus a consensus seems now to exist for the long-term need of a synfuel capability as a secure cap, or insurance on supply and price.

At the same time it is now better understood that synthetic fuel technology is rather unique in that most of it revolves around handling and processing of solids (coal, shale, tarsand). This is a notoriously difficult area of chemical engineering, because extrapolation from lab, to pilot to commercial size equipment is unpredictable. Only full scale reactors, operated over extended period (years) can eliminate the technical risks for synfuel plants.

Thus a program has been proposed (see the SFC Business Plan, etc.) which would eliminate this specific risk and those associated with environmental concerns for the 8-10 critical resource/technology combinations. This can be done, most cost effectively, by sizing the projects at the minimum which will fulfill the purpose.

I am indeed very comfortable with the new SFC assignment in the context of the present energy patterns and budget constraints, and believe SFC can do the job.

Re Question 2 (Sen. Ford to Reichl): Much of the needed comments to this Question are touched upon in my reply to Question 1. The key purpose is reduction of the very major technological risks of synfuel technologies which arise from the solids handling issue. The same applies to demonstration that synfuel plants are "clean".

To achieve this the first requirement is that the major solids handling equipment is FULL COMMERCIAL SIZE; this varies somewhat with the several technologies.

The second requirement, not as easily achieved, is the proof that a complex set of individual processing steps can indeed be operated as a complete entity. For example, Gt. Plains comprises some 15 individual process units, Coolwater some 8 or 9. Finally, the system must be operated long enough, that safe numbers for availability of individual sections and of the total assembly are obtained.

Obviously the most desirable plant size would be one where economies of scale assure continued operation beyond SFC support. Gt. Plains was so conceived resulting in a $2 billion project. For new coal-projects it appears that the best "niche" will be plants where gasifiers are tied to power generation via combined cycle units; in this context much smaller plants seem fairly attractive; see Coolwater and others under discussion.

In the case of shale, tarsands, etc. each project will have to be evaluated on its own merits to arrive at the lowest overall project cost within the framework of the three above objectives.

In this context it is worth remembering that even a "small" project is very large in absolute terms; probably involving costs measured in $100's of millions and 1000's of tons throughput per day, lasting many years and requiring labor forces of several hundred workers.

Re Question 3 (Sen. Ford to Reichl): Hydrogenation (of coal) is one of the two basic systems available to convert this solid fuel to liquids and gases, primarily liquids. Up to 1945 most experience was with this system. Since then indirect liquefaction (via gasification) has moved ahead.

There is no agreement in industry or among experts which is preferred (in some instances the choice depends on the type of coal); it would be wrong for SFC to make this decision therefore both gasification and hydrogenation should definitely be part of the basic SFC program.

However up to this moment no attractive hydrogenation project has been proposed to SFC in response to earlier solicitations. Another reason for delay is the current R&D activity, much of it supported by DOE, which may lead to possible savings from earlier configurations. Specifically, the so-called "integrated-two stage" reactor concept offers advantages which could be captured in a future project.

A specific problem here may be the need to proceed in a staged approach, with an initial project which is clearly less than fully commercial in scale of equipment. To give an idea note that the "standard" and still largest commercial (German) reactor train had only 400 Ton/day capacity. Recently three pilot plants with 200 Ton/day capacity have been operated and future "commercial" reactors are now expected to have 2-5000 Ton/day throughput. A single train unit of this size, termed a "Reference Plant" is in design in Germany.

Hydrogenation development, because it requires solids processing at very high pressures (2-4,000 PSi) is uniquely a hardware and equipment issue and a very costly one. This is a special example where international co-funding makes a lot of sense. At one time this seemed assured (the old SRC-II job); may be the idea can be resurrected, but the ESA limits SFC projects to Western Hemisphere location; a U.S.-German co-funded project in Canada may be possible if the proper parties can be brought together.

Re Question for E. Reichl (Sen. Ford) re: DOE Clean Coal Program:

a): Very definitely YES. Even if no new legislation to combat acid rain is passed, the need for better clean coal use technology exists based on current regulations.

b): The answer to this question is given in the ERAB report on clean coal use. The current program is not adequate because it does not pursue technologies through to the point of industry acceptance (particularly that of the electric power industry).

However, it should be added that the main contribution must come from the private sector (incidentally that should help to assure control and management of the job by the private sponsor).

c): The SFC should denifinitely NOT become involved. It would detract SFC attention from the basic goal of that organization. Also the Clean Coal Program is more R&D oriented and the SFC is not geared to administer such programs.

There is one important overlap: the oxygen gasifier under pressure (in various forms) is the centerpiece of the SFC synfuels programs for coal (Gt. Plains, Coolwater, Dow, Keystone, Scrubgrass, Slagger, are ALL based on alternate versions of this key step). The system is also attractive for new coal based power plants. DOE need not duplicate these projects in their Clean Coal Program.

d): No, the SFC charge aims at "Synthetic Fuel Projects." Except for the overlap (see c) with oxygen gasifiers the cleaning of coal, for example, or flue gas clean up would not be covered; this clearly belongs to DOE where a good R&D base is available.

Also included in the DOE program would be air-blown gasification (Lo-BTU gas) which is one means to use coal cleanly.

e): The clean coal use technologies are a near term need (contrary to the SFC program). They should be a key part of the DOE Fossil Energy program under Asst. Sec'y. Vaughan and his director for Combustion R&D Mr. Rich. Harrington.

However, the current policy of DOE limits their work to "high risk, long-term, high payout" projects and to a "proof of concept" scale effort. This is not an appropriate policy for this specific area; it should be revised to allow DOE participation in larger scale test programs. Short of such demonstrations no new technology will see the light of day.

Question for each Nominee (Sen. Ford): Re: Eastern Coal

The role of Eastern Coal remains pivotal to the total U.S. energy supply. These resources are reasonably congruent with the major market for energy in the U.S.

For the near term the main use of these coals will continue to be for generation of electricity. Eastern coals will also continue to remain the main source of coke for the steel-industry.

New technologies for cleaner use and some which can be viewed best as synthetic fuel systems, will become available to solve the notorious sulfur problems associated with certain eastern coals. Both DOE and SFC will be involved in developing these technologies (including gasification with either air or oxygen).

Eastern coals are also especially good feed stocks for direct hydrogenation and when SFC develop a project of this type it will most likely be in the East.

As to the longer range supply of synthetic liquids and gases from coal, this does not seem imminent at this instant but when the time comes the technology to use eastern, and all other U.S. coals will be ready if the proposed SFC program is executed.

Answers of Paul W. MacAvoy to Questions of
Senator Wendall Ford

1. Does the business plan itself call for cutting back the projects one third as large or are you simply advocating that projects be one third as large as originally envisioned?

The Business Plan does not call for cutting back projects to one third as large as the Letter of Intent projects, nor do I advocate as a limiting rule a down scaling of projects to one third previously envisioned levels. But projects of full commercial scale of fifty thousand barrels per day capacity would have capital outlays of more than five billion dollars. Given the cut back in SFC funding in keeping with the Senate-White House agreement of last year, it would be possible to undertake only two such projects in the lifetime of the Synthetic Fuels Corporation at that scale. Alternatively, it would seem possible to expand learning opportunities from new technology by scaling projects back to fifteen thousand barrels per day capacity or less, and undertaking six projects rather than two over the SFC time span of operations. Even in that simple alternative strategy, however, there is no basis for precluding a larger plant than fifteen thousand barrels per day. In each case, plant size appropriate for the Business Plan would be given by the scale of components or modules consistent with that found in the "first commercial enterprise".

Shouldn't the size of the project be dictated by the specific plant size necessary to achieve commercial experience with a particular technology?

That is correct. But if the plant contains twelve modules each of identical size, a substantial portion of the "commercial experience" can be obtained from running one to three rather than building and operating all twelve. The cost savings from down-sizing have to be compared with the value of the loss of full "commercial experience".

2. Who asked you to serve as a member of the Board of the SFC?

I was contacted by a staff member of the White House Personnel Office whose name I do not recall.

Were you given any instruction or did you make any commitments with regard to your role as a director?

I was given no instruction by anyone on the White House Staff or elsewhere in the government nor did I make any commitments to anyone on the White House staff or anywhere else in the government with regard to my role as a director.

3. As a conservative economist did you have doubt as to wisdom of the federal government's subsidizing the development of synthetic fuels?

My experience with the nuclear reactor development programs and large scale desalting development program left me with some question as to whether the federal government can develop and manage a large scale program to create new technology that has benefits in excess of costs. But my research on both these programs also indicates that strategies can be developed which do provide net societal benefits (CF P. MacAvoy Economic Strategy for Developing Nuclear Breeder Reactors (MIT Press, 1969) and P. MacAvoy and F. Peterson Large Scale Desalting: A Study in the Engineering Economics of Regional Development (NY, Praeger Press, 1969)). What was necessary to convince me on the wisdom of the synthetic fuels development strategy was that there existed a strategic plan which could produce present value benefits in excess of the prospective outlays of federal funds supporting the program. As indicated in my testimony before the Senate Energy Committee, I have determined to my satisfaction that the Business Plan for Phase I of the SFC development program has the prospect of producing such results.

4. What do you hope to accomplish at the SFC?

The full realization of the Phase I Business Plan at prospective outlays significantly less than eight billion dollars.

Are you saying that all other things being equal if two projects use the same gasification process but one converts the gas to liquids that you will fund the one producing liquids?

That statement is not an expression of my views, nor do I know to what it refers to in my testimony or other public remarks on Synfuels strategy.

5. How do you go about determining what is the smallest plant that is commercial scale for a given technology?

This has to be approached on a case-by-case basis. The rough general standard is to maintain that each major component module or system in the plant be of commercial scale. As stated in my response to question one, the scaling issue then becomes one of determining how much duplication of the major systems or modules occurs within a single plant. To the extent that there is such duplication, then systems or modules can be eliminated and the plant scaled down accordingly.

6. If Congress were asked today to enact legislation that currently exists regarding the Synfuels Corporation would you advocate its passage?

The answer is positive, because I believe that the program now underway has the prospect of adding substantially to the energy production capacity of the United State economy. That capacity has "present value" equal to the cost savings from avoiding importation of higher priced crude oil and natural gas from foreign sources of supply at that time.

7. I have reviewed the SFC's Statement of Objectives and Principles, Business Plan, and draft Comprehensive Strategy, and overall I find them well thought out and reasonable. However, I am still not clear what role one of our nation's most significant energy resources -- eastern coal -- which is frequently relatively high in Btu value and sulphur content will play in the SFC's program. I would appreciate your comments.

I agree with the answer provided by Mr. Corcoran (see Corcoran answer 5).